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AGE SIZE COMPOSITION OF THE MENHADEN CATCH ALONG THE ATLANTIC COAST OF THE UNITED STATES, 1952-55

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WITH A BRIEF REVIEW OF THE COMMERCIAL FISHERY

SPECIAL SCIENTIFIC REPORT–FISHERIES No. 317

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FISH AND WILDLIFE SERVICE

EXPLANATORY NOTE

The series embodies results of investigations, usually of restricted scope, intended to aid or direct management or utilization practices and as guides for administrative or legislative action. It is issued in limited quantities for official use of Federal, State or cooperating agencies and in processed form for economy and to avoid delay in publication.

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AGE AND SIZE COMPOSITION OF THE MENHADEN CATCH ALONG THE ATLANTIC COAST OF THE UNITED STATES, 1952-55; WITH A BRIEF REVIEW OF THE COMMERCIAL FISHERY

by

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United States Fish and Wildlife Service
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ABSTRACT

Included are a brief description of menhaden purse-seine fishing gear, methods, and seasons; a summary of the major features of the 1955 Atlantic Coast purse-seine fishery; a description and analysis of the methods of sampling the catches; and tabular data resulting from the catch-sampling program. Measurements of the catch of Atlantic menhaden (Brevoortia tyrannus), apparent abundance, and total fishing effort showed considerable variation in different areas of the coast in 1955, with highest apparent abundance encountered on the North Carolina fall fishing grounds. Age, length, and weight composition of samples from the catches from 1952 through 1955 revealed the presence of a dominant year class in the fishery and established that different age and size groups support the catches in different areas along the coast; in summer, younger, smaller fish were found to occur in southern waters, and older, larger fish, farther northward. All age and size groups were shown to be represented in the fall fishery off North Carolina.

INTRODUCTION

The menhaden fishery along the Atlantic coast of the United States ranks as one of the leading fisheries in the world. Within the past decade, annual production has nearly doubled, reaching a peak over 700,000 tons in 1955. Despite this phenomenal rise in total yield, there have been marked seasonal variations in the catches in the various areas along the coast, and seasons of increased abundance in certain localities have been followed by several years of poor fishing. Downward fluctuations and periods of scarcity have had adverse economic effects in certain localities and generally have been viewed with alarm by the menhaden industry. To investigate and, if possible, to forecast these fluctuations, a program of research was undertaken by the U. S. Fish and Wildlife Service in 1955. The coastwise program was an expansion of a preliminary study of the biology of the Atlantic menhaden (Brevoortia tyrannus) initiated in 1952.

One of the major activities of the research program is concerned with sampling the commercial catches. The immediate objective of this work is to determine the relation between changes in size and age composition and fluctuations in the catch. The data obtained also furnish information on growth, migrations, mortality rates, and sexual development of the fish.

This report presents the methods and results of sampling the Atlantic menhaden fishery from 1952 through 1955. In addition, information on purse-seine fishing gear, methods, seasons, and locations, together with a summary of the salient features of the 1955 purse-seine fishery are given to provide a background for the conduct of the sampling program. Little attempt has been made in this report to offer detailed explanations or hypotheses for certain findings, except to point out some of the more outstanding features shown by the data.

ACKNOWLEDGMENTS

Many persons have contributed to the menhaden investigations from 1952 through 1955. Thanks are due to the fishermen who voluntarily submitted daily records of their fishing activities. Special acknowledgment is due to the processing plant operators who made records of menhaden landings available. Without their interest and cooperation, most phases of the investigations would have been impossible.

Many temporary field assistants took part in the collection of menhaden samples. Charles M. Roithmayr assisted in the age determinations and was largely responsible for the field supervision of the 1955 catch-sampling program. Mary K. Hancock was responsible for the compilation of the catch-sampling data and assisted in their analysis.

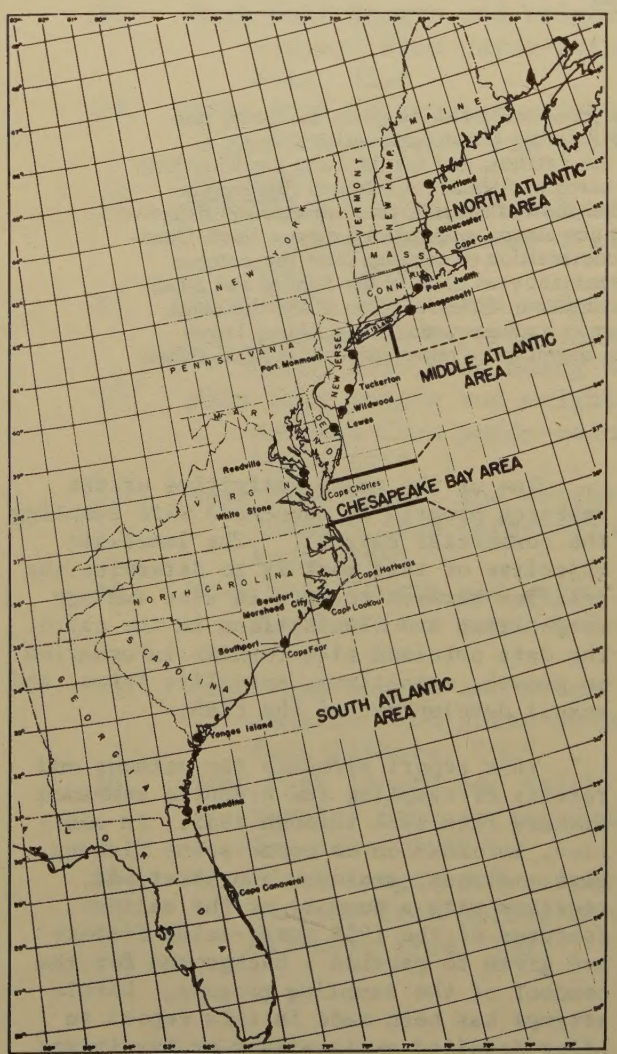

Figure 1.--Areas used in summarizing menhaden catch data. Locations of menhaden reduction plants are shown by dots.

AREAS

For purposes of summarizing and discussing the data herein reported, the Atlantic coast arbitrarily has been divided into what appear to be four natural fishing areas (fig. 1). The boundaries between areas have been drawn so as to pass through waters where relatively little or no fishing occurs and, in general, represent the limits of the operating range of vessels delivering to reduction plants in the various localities.

South Atlantic Area: Waters between Cape Canaveral, Fla. and a line running due east from False Cape, Va. (lat. 36° 35' N. and long. 75° 53' W.).

Chesapeake Bay Area: Chesapeake Bay proper and coastal waters outside the Bay lying between False Pape and Great Machipongo Inlet, Va. (lat. 37° 22' N. and long. 75° 43' W.).

Middle Atlantic Area: Waters north of Great Machipongo Inlet, Va. to a line running due south of Moriches Inlet (lat. 40° 46' N. and long. 72° 44' W.) on the southern coast of Long Island.

North Atlantic Area: Waters along the southern coast of Long Island, east of a line due south of Moriches Inlet, Long Island Sound, and waters northward.

THE MENHADEN FISHERY

Fishing Gear and Methods

The commercial fishery for menhaden along the Atlantic coast is based on a single species, Brevoortia tyrannus (Latrobe) 1/.

1/ A second species, Brevoortia smithi (Hildrebrand), occurs in Florida waters, but only scattered individuals appear in purse-seine catches off Fernandina Beach, Fla. A small gill-net fishery for this species is conducted in Indian River, Fla. The catch is sold locally for bait.

The fish are caught in the inshore waters principally by means of purse seines. A small proportion of the catch (about 2 percent) is taken by pound nets set expressly for capturing migratory food species. Although menhaden taken by the latter gear usually are sold for bait, the spring "runs" (in April and May) into the Raritan-Lower New York Bay area and in Chesapeake Bay in recent years have provided sufficient quantities for reduction by plants located in those areas.

Vessels employed in the purse-seine fishery range from about 85 to 152 feet in length and from 75 to 358 gross tons. Each vessel carries a purse seine, two 30-foot purse boats, and a striker boat. The seines range from about 175 to 200 fathoms in length from 9 to 15 fathoms in depth, with 1 3/4 inch stretched mesh. Most vessels are equipped with a radio telephone and echo-sounder. Radar also is becoming standard equipment on many vessels. Recent adoption of a brine cooling system in the holds of several vessels for preservation of the catch has enabled fishing to be conducted at greater distances from the processing plants.

On the fishing grounds the two purse boats are towed together behind the "carrier" vessel, with half of the net in each boat. Once the fish are located, a scout in the striker boat maintains contact with the school while the two purse boats approach the school. In setting the net, the two purse boats separate and head in opposite directions, each paying out its portion of the net as it quickly completes a half-circle around the school of fish. When the two ends of the net are brought together, the purse lines are run through a heavy lead weight called a "tom" and secured to a winch. The "tom" is dropped overboard and closes off the bottom of the net as it rides down the purse lines. When pursing is completed, the ends and bottom of the net are hauled aboard the purse boats until the fish are confined in the bunt between the two purse boats. The recent introduction of net-handling equipment, mounted in the purse boats (fig. 2, p. 4), has somewhat reduced the labor of the crew in drying up the net. An average purse-seine set yields about 25 tons of fish; however, sets capturing up to 500 tons have been made. On most menhaden vessels a fish pump is used for transferring the catch from the net into the hold.

There has been a considerable increase in the efficiency of purse-seine fishing in recent years through the use of airplanes for locating the fish and directing the setting of the net. Planes were first used on a large scale about 1946 and gained an impetus after 1951 when loud speakers, mounted on the bottom of the plane, were used by the pilots to direct the encircling of the fish by the purse boats. Soon after, walkie-talkie radios were installed in the purse boats, thus enabling the pilot to talk directly with the captain. This new method of fishing has greatly reduced scouting time and also opened up new fishing areas by showing the presence of sub-surface schools of fish in deep waters.

Purse seining for menhaden is carried on exclusively during daylight hours. The vessels usually make daily runs to the fishing grounds, landing the catches after dark or when the hold has been filled. During the fall months, when catches are running light and loss from decomposition is negligible, vessels occasionally may fish for two consecutive days before returning to the processing plants.

Fishing Seasons in Different Localities

Menhaden generally are considered to be surface-schooling fish; however, during the late winter and early spring months, they rarely are seen at the surface. During April and May, there is a gradual influx of fish into the inshore waters where they congregate in dense schools. The seasonal appearance of schools at the surface, therefore, is of fundamental importance in determining the beginning and end of purse-seine fishing.

The dates of first and last purse-seine landings in each locality from 1952 through 1955 are given in table 1 (p. 5). Although the dates varied slightly from year to year, it is evident that the length of the fishing season in a given area of the coast tends to remain rather constant. The schools usually first appear in April near the southerly end of the range and successively later farther northward. By June the fish range from northern Florida to the Gulf of Maine. In September or October the schools begin to disappear from the most northerly areas, and withdrawal proceeds from north to south during October. In November and December

tremendous bodies of fish appear off the North Carolina coast and support a sizable fishery until early January when they once more disappear from coastal surface waters.

Fishing Grounds

Some knowledge of the grounds fished by the purse-seine fleet is furnished in figure 1, which shows the location of menhaden reduction plants on the Atlantic coast. With the exception of those located in New England, the reduction plants utilize menhaden exclusively in the manufacture of fish meal, oil, and condensed solubles. Plants at Portland, Me., Gloucester, Mass., and Point Judith, R. I., rely mainly on other industrial species and the by-products of the fish-filleting plants, but augment their supply of raw material with menhaden during seasons when this more desirable species appears in northern waters.

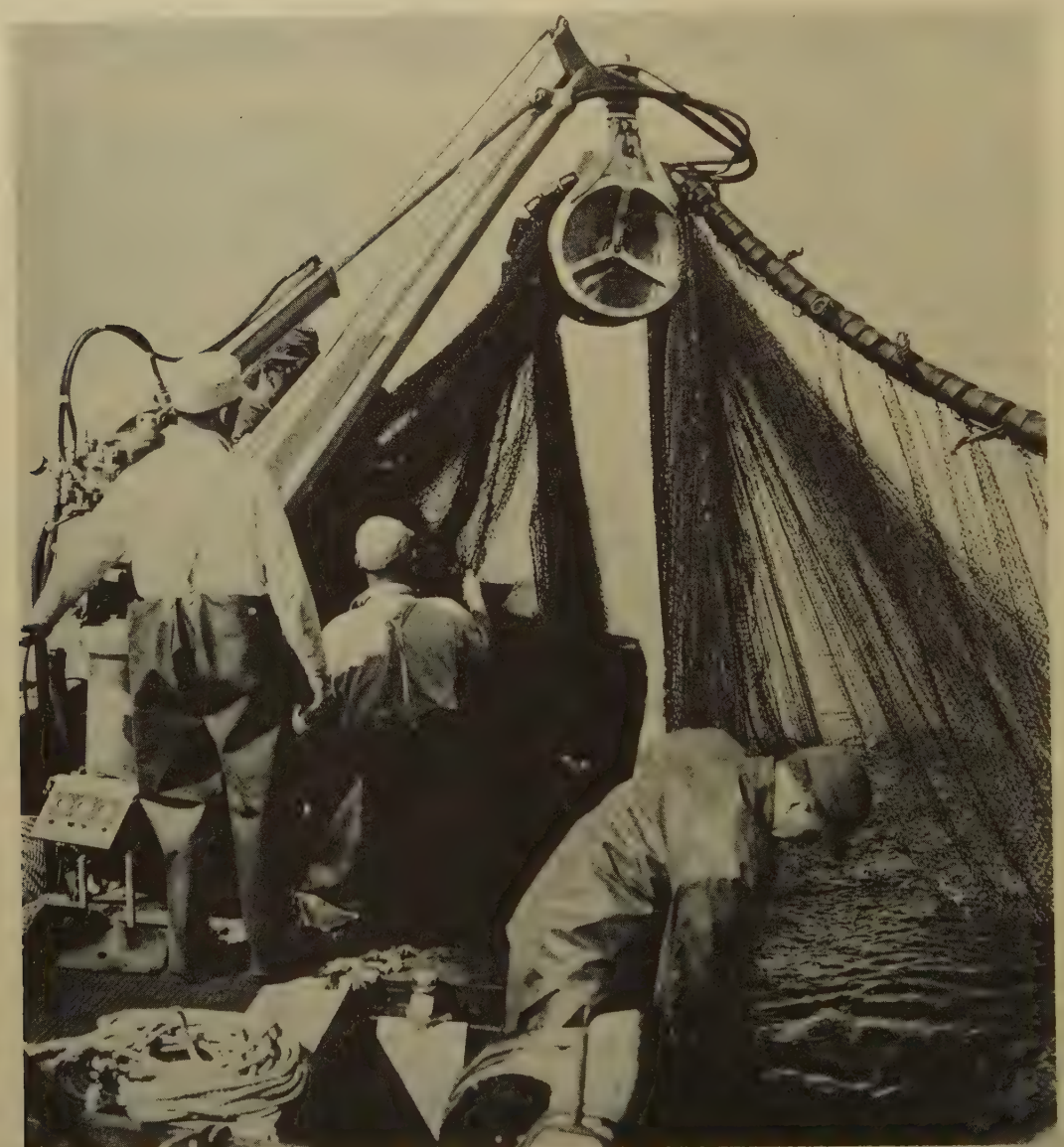

Figure 2.--Net-handling equipment mounted on a menhaden seine boat.

Table 1.--Purse-seine fishing seasons by locality, 1952-55

Locality	Year							
	1952		1953		1954		1955	
	Dates of first and last landings	Number of weeks in season	Dates of first and last landings	Number of weeks in season	Dates of first and last landings	Number of weeks in season	Dates of first and last landings	Number of weeks in season
Fernandina Beach, Fla.	Apr. 7-Oct. 17	28	Apr. 1-Nov. 4	31	Apr. 19-Nov. 4	28	Mar. 25-Dec. 9	34
Yonges Island, S. C.	1/	-	1/	-	1/	-	May 28-Aug. 29	13
Southport, N. C.	May 2-Oct. 30	26	Apr. 28-Oct. 31	27	May 3-Sep. 25	21	Apr. 28-Oct. 12	24
Beaufort, N. C. (Summer)	Apr. 29-Oct. 4	23	May 11-Sep. 17	18	May 10-Oct. 27	24	May 9-Sep. 12	18
North Carolina (Fall).	Nov. 4-Jan. 15	10	Oct. 31-Jan. 17	11	Nov. 1-Jan. 17	11	Oct. 27-Jan. 13	11
Whitestone, Va.	May 27-Oct. 28	22	May 26-Nov. 3	23	May 31-Nov. 2	22	May 30-Nov. 2	22
Reedville, Va.	May 30-Oct. 29	22	May 26-Nov. 4	23	May 31-Nov. 2	22	May 30-Nov. 3	22
Lewes, Del.	June 4-Oct. 17	19	May 25-Oct. 27	22	May 24-Oct. 28	22	May 25-Oct. 21	21
Wildwood, N. J.	May 26-Oct. 14	20	May 25-Oct. 20	21	May 19-Oct. 30	23	May 20-Oct. 22	22
Tuckerton, N. J.	June 5-Oct. 8	18	May 23-Oct. 24	22	May 24-Oct. 20	21	May 21-Oct. 20	22
Port Monmouth, N. J.	1/	-	1/	-	1/	-	May 18-Oct. 20	22
Amagansett, N. Y.	June 25-Oct. 2	14	June 17-Oct. 2	15	June 14-Oct. 12	17	June 7-Oct. 18	19
Point Judith, R. I.	1/	-	1/	-	1/	-	June 1-Oct. 13	19
Gloucester, Mass.	June 3-Sep. 10	14	June 4-Sep. 15	15	June 10-Oct. 1	16	June 7-Oct. 6	17
Portland, Me.	2/	-	1/	-	1/	-	June 18-Sep. 13	12

1/Data unavailable
2/No commercial fishery

Detailed information on the area fished by the purse-seine fleet is furnished from logbook records of daily fishing activities kept by the vessel captains or pilots. Logbooks, together with a chart of the appropriate fishing grounds, are issued to all vessels in the fleet at the beginning of the season. A sample page of the logbook is shown in figure 3. The logbook remains the property of the vessel captain, and duplicate carbon sheets are collected weekly by staff members.

The charts used for locating the daily fishing activities were adapted from those developed for gathering fishery statistics in the North Atlantic (Rounsefell, 1948). These consist of standard navigation charts of the Atlantic coast divided into the following areas: Gulf of Maine, Southern New England, Middle Atlantic-Chesapeake Bay, South Carolina-Georgia, and Georgia-Florida. A chart of the Southern New England Banks is shown in figure 4. Catch data are recorded by unit areas of 10 minutes of latitude and 10 minutes of longitude.

Logbooks were first used in the menhaden purse-seine fishery in the Middle Atlantic Area in 1952 and in 1955 were introduced into the fleets in the other areas along the coast. Data relating to fishing grounds exploited by the Middle Atlantic purse-seine fleet from 1952 through 1954 have been summarized by June and Reintjes, 1957, and Reintjes and Roithmayr (unpub. ms.) 2/.

In summarizing the data for 1955, the total number of sets within each unit area was tabulated and plotted (figs. 5-7) to

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2/ Survey of the ocean fisheries off Delaware Bay - Supplemental report, 1954-58. U. S. Fish and Wildlife Service, Bureau of Commercial Fisheries, Biological Laboratory, Beaufort, N. C.

(Mar. 1954) **FISHING LOGBOOK—PURSE SEINE VESSEL (MENHADEN)** Budget Bureau No. 42 R1154.2. Approval expires 12-31-58.

Date 195.5	Set No.	Time of Set	Fishing Area	Location of Set	Water Depth (Fathoms)	Fish Caught (Estimate)	Remarks
JULY							
18	1	9:00 AM	39-74	E5		75 M	
	2	11:15 AM	"	"		40 M	
	3	2:00 PM	"	E6		35 M	
19	1	8:30 AM	38-73	A3		0	TORE UP NET
20	1	6:15 AM	38-74	A1		150 M	
	2	9:00 AM	"	"		90 M	
21			38-74			X	WINDY BACK TO PLANT 9:30 AM
22						X	WINDY TIED UP

Figure 3.--Sample page from fishing logbooks issued to menhaden purse-seine vessel captains.

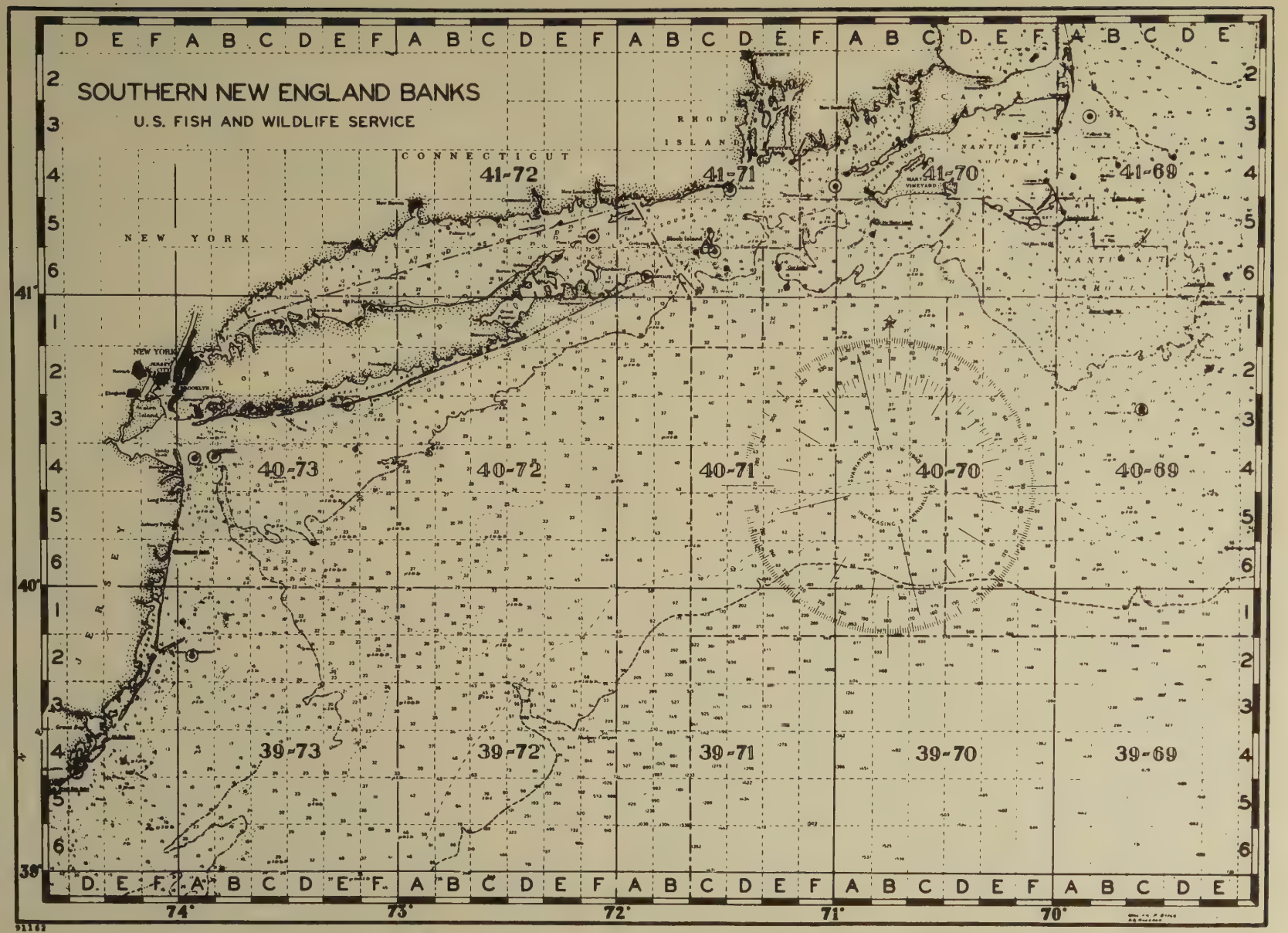

Figure 4.--Sample chart of the Southern New England Banks used to record areas in which menhaden purse-seine catches are made.

show the distribution of total fishing effort [3/]. It may be seen that the grounds most heavily exploited were (1) off Cape Lookout, (2) Chesapeake Bay, (3) along the coasts of Maryland, Delaware, and New Jersey, (4) Delaware Bay, (5) southern Long Island, and (6) Massachusetts Bay. Of the total number of sets calculated from the logbook data (25,652), about one-third was made in those areas.

The 1955 Purse-Seine Fishery

A record catch of 685,000 tons of Atlantic menhaden was landed by the purse-seine fishery in 1955. The phenomenally high catches in Chesapeake Bay and the excellent catches in the North and Middle Atlantic areas, together with the increased yield of the fall and early winter fishery in North Carolina, were mainly responsible for the continued upward trend in production which had its beginning in 1952. In contrast to the high levels of abundance in those areas, the summer purse-seine catch in the South Atlantic Area, particularly in Florida, was generally poor.

The first purse-seine catches of the 1955 season were made in late March when two vessels encountered scattered schools south of Jacksonville, Fla. Additional vessels entered the fishery in that area in April. By mid-May, catches were sporadic in Florida waters, and the vessels moved farther northward. The plant at Yonges Island, S. C., was opened in late May; however, fishing in the area continued to be poor through the summer, and two of the plants closed in August. A small influx of fish into the area in the fall enabled one plant to operate until early December.

In late April several large schools of fish were sighted along the North Carolina coast, and subsequent fishing at Southport and Beaufort was good until mid-July. Tropical cyclones interrupted operations in August, and only scattered landings were made during the remainder of the summer season.

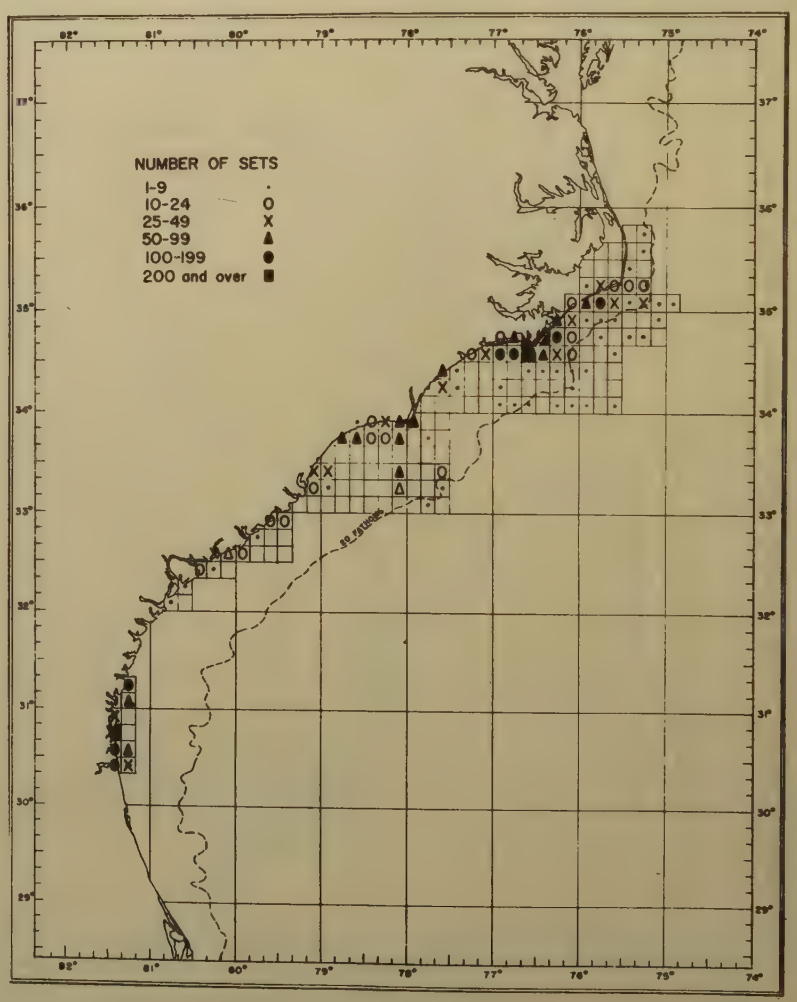

Figure 5.--Distribution of fishing effort in the South Atlantic Area, 1955.

3/ Logbook information was available from over 60 percent of the daily vessel landings recorded in processing plant records. Because vessels from a given plant locality normally operate as a fleet, the number and location of sets recorded by a sample of the fleet was used in calculating total fishing effort for each fleet. This was accomplished by multiplying the number of sets recorded by the sample fleet (by unit areas) by the ratio of the total number of daily vessel landings to the number of daily landings recorded for the sample fleet.

The purse-seine season in Chesapeake Bay officially opened May 30 [4/], and except for roughly 20 days of poor fishing following the tropical storms which swept that area in August, catches were exceptionally good throughout the summer and fall. The bulk of the catch through July was composed of age-2 fish, after which time age-1 fish predominated. The last landings in the Bay were made on November 3. A catch of 153,000 tons established the second highest record in the history of the Bay fishery.

Purse seining in the Middle Atlantic Area commenced on May 18 when scattered, small schools of fish were spotted along the northern New Jersey coast from Barnegat Inlet to Raritan Bay. Fishing in this area continued through the month. During the first week in June, schools became increasingly abundant along the southern New Jersey and Delaware coasts, and by mid-June a fleet of 46 vessels fished the area from Chincoteague, Va., to Fire Island, N. Y. Except for a 2-week period of rough weather in August, when most of the fleet was tied up, the entire area produced excellent catches through the third week in October. In mid-September, schools of larger fish moved into Long Island Sound and around Montauk Point; however, the schools were "wild", and few of these fish were caught until the last week of the season, when the entire fleet fished from Long Branch, N. J., eastward to Fire Island Beach, N. Y. The purse-seine catch in the Middle Atlantic Area amounted to 328,000.

The first catches of the season in the North Atlantic Area were taken in Narragansett Bay on June 1 by Point Judith, R. I., vessels. During the following week, fish were encountered in the vicinity of Montauk Point, N. Y., by the Amagansett, N. Y., vessels and in Massachusetts Bay by the Gloucester, Mass., vessels. The first landings at Portland, Me., were made on June 21. Fishing in the Casco Bay area was spotty throughout the summer; however, vessel captains reported that schools were abundant,

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4/ Virginia law prohibits purse-seine fishing in Chesapeake Bay prior to the last Monday in May.

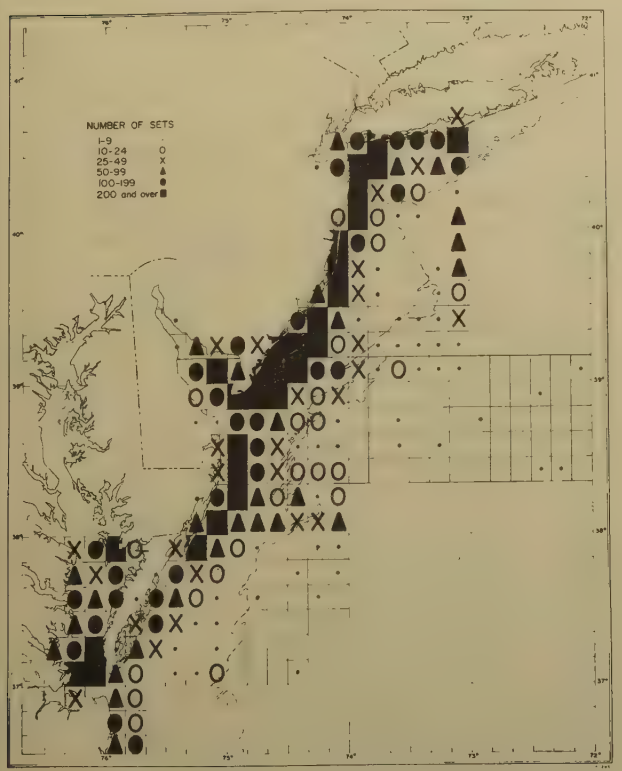

Figure 6.--Distribution of fishing effort in the Chesapeake Bay and Middle Atlantic areas, 1955.

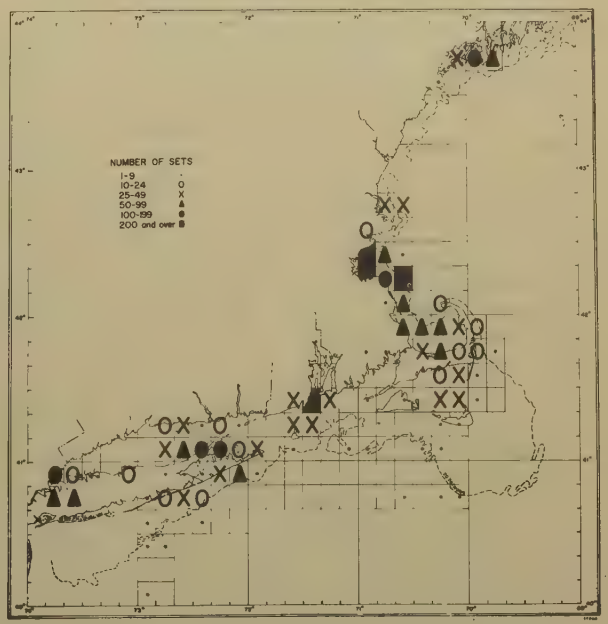

Figure 7.--Distribution of fishing effort in the North Atlantic Area, 1955.

but too deep for productive fishing. The last catches in that area were taken off Mark Island on September 13. Massachusetts Bay, Cape Cod Bay, and northern Long Island Sound provided excellent fishing through mid-October. A purse-seine catch of 83,000 tons established a new modern record in the North Atlantic Area.

The first fish marking the fall "run" into North Carolina waters were observed by spotting planes in upper Pamlico Sound in the vicinity of Oregon Inlet on October 18. The first catches by a fleet of 49 vessels were taken on October 27 off Drum Inlet. Fishing on several large bodies of mostly age-2 fish continued through November. On December 2 a body of larger, older fish was sighted between Cape Hatteras and Cape Lookout, and the first catches were landed off Drum Inlet on the following day. Because of rough seas, only limited fishing was conducted on this huge body of fish during the next five days. Heavy landings during the remainder of the season were composed exclusively of age-0 fish which were particularly abundant in the inshore waters from Cape Lookout to Bogue Inlet. Over 30,000 tons of these small fish were caught during a 5-week period commencing with December 8. Fishing was terminated on January 13, 1956 when the last schools were encountered off Bogue Inlet.

Data on the 1955 catch, catch per unit of effort, and total fishing effort for the purse-seine fishery are given in table 2. Catch per unit effort was calculated from plant records of daily landings by individual vessels and logbook data. Total fishing effort was calculated from the purse-seine catch and the average catch per set. This was the first year that these statistics were available on a coastwise basis.

The average catch per set for the purse-seine fishery in 1955 amounted to 26.0 tons. Catch per unit effort for the coast as a whole was highest for the North Carolina fall fishery (38.7 tons), while for the summer fishery it was greatest in the North Atlantic (28.8 tons) and smallest in the South Atlantic (18.8 tons).

Table 2.--Estimated catch (in tons), catch per unit effort (in tons), and total fishing effort (number of sets), Atlantic Coast menhaden fishery, 1955

Area	Estimated catch[1]				Catch per unit effort purse-seine fleet[3]	Total fishing effort
	Purse-seine	Pound net	Other[2]	Total		
South Atlantic	48,000	-	-	48,000	18.8	2,553
Chesapeake Bay	153,000	4,000	1,000	158,000	27.2	5,625
Middle Atlantic . . .	328,000	9,000	-	337,000	24.6	13,333
North Atlantic	83,000	2,000	-	85,000	28.8	2,882
North Carolina fall fishery . . .	73,000[4]	-	-	73,000	38.7	1,886
Total	685,000	15,000	1,000	701,000	26.0	26,279[5]

1/Source: Anderson, A. W. and E. A. Power (1957).
2/Includes otter trawls, gill nets, haul seines, fyke nets, and floating traps.
3/Average catch per purse-seine set.
4/The North Carolina fall fishery normally extends into early January, therefore, the catch total for North Carolina includes January 1956, but not January 1955. Seasonal breakdown of the catch obtained from U. S. Fish and Wildlife Service, C.F.S. Nos. 1252, 1274, and 1288.
5/Slight discrepancy due to rounding off of the figures.

SAMPLING OF THE COMMERCIAL CATCHES

The collection of samples from catches landed by the purse-seine fishery was begun at Lewes, Del., in 1952. From one to five samples were obtained weekly at both Lewes and Wildwood, N. J., during the 1952 and 1953 fishing seasons. Additional samples were obtained at Tuckerton and Port Monmouth, N. J.; Gloucester, Mass.; and Portland, Me. In 1954 periodic sampling was initiated at Port Monmouth, N. J., and Amagansett, N. Y. A few additional samples also were collected at Gloucester and Portland. Beginning in 1955, samples for the most part were obtained each day that the vessels landed catches at Fernandina, Fla.; Yonges Island, S. C.; Southport and Beaufort, N. C.; Reedville, Va.; Lewes, Del.; Port Monmouth, N. J.; Promised Land, N. Y.; Gloucester, Mass.; and Portland, Me. Additional samples were obtained at Reedville, Va., and Port Monmouth, N. J., during the spring pound-net season (April and May) in those localities. A tabulation of the number of samples taken at each locality from 1952 through 1955 is given in table 3.

Table 3.--Number of samples taken from commercial catches, 1952-55

Year	Locality	Number of samples		
		Purse seine	Pound net and other 1/	Total
1952	Lewes, Del.	48	-	48
	Wildwood, N. J.	3	-	3
	Tuckerton, N. J.	1	-	1
	Port Monmouth, N. J.	2	-	2
	New Jersey coast	-	6	6
	Total	54	6	60
1953	Lewes, Del.	66	-	66
	Wildwood, N. J.	6	-	6
	Tuckerton, N. J.	4	-	4
	Port Monmouth, N. J.	2	-	2
	New Jersey coast	-	2	2
	Gloucester, Mass.	4	-	4
	Total	82	2	84
1954	Lewes, Del.	58	-	58
	Wildwood, N. J.	8	-	8
	Tuckerton, N. J.	2	-	2
	Port Monmouth, N. J.	25	-	25
	New Jersey - southern Long Island coasts	-	12	12
	Amagansett, N. Y.	91	-	91
	Gloucester, Mass.	8	-	8
	Portland, Me.	3	-	3
	Total	195	12	207
1955	Fernandina, Fla.	27	-	27
	Yonges Island, S. C.	23	-	23
	Southport, N. C.	34	-	34
	Beaufort, N. C. (Summer)	67	-	67
	North Carolina (Fall)	65	12	77
	Reedville, Va.	139	20	159
	Lewes, Del.	119	2	121
	Port Monmouth, N. J.	138	-	138
	New Jersey - southern Long Island coasts	-	22	22
	Amagansett, N. Y.	92	-	92
	Gloucester, Mass.	23	-	23
	Portland, Me.	28	-	28
	Total	755	56	811

1/Includes gill nets and haul seines.

Analysis of Sampling Methods

In the catch-sampling program, we are concerned with changes in the population over its entire range of distribution, hence, our estimates of its various properties depend on: (1) how adequately the fishery samples the population and (2) how representative our samples are of the catch from which they are drawn. Although the relation between the commercial catches and the population is not known at present, there is little doubt that the commercial catches provide the best means of assessing the composition of the population. In order to devise a system of sampling which would furnish a true representation of the commercial catches, results obtained in 1952 were used as a guide. The preliminary findings have been verified from additional material gathered in other areas along the coast in subsequent years.

At the start of the sampling program, consideration was given to the selection of the length measurement which was most representative of the bulk of the fish. Comparisons were made of the regressions of body weight on fork length, total length, and standard length [5/] for 50 specimens, ranging from 188 to 299 mm. fork length. Length measurements, to the nearest millimeter, were made on a measuring board having a nose block at one end and a millimeter scale inlaid along the center of the board. The fish were weighed to the nearest gram on a triple-beam balance. All measurements were made on fresh specimens. The logarithmic standard errors of estimate were computed (Snedecor, 1946) and coefficients of variation obtained (by taking the antilogarithms). The results indicated that differences among the three methods of measurement were inconsequential (C = 10.3, 10.2, and 10.2 percent for fork length, total length, and standard length, respectively). From a practical standpoint total length is not the most desirable measurement because the tips of the caudal fin often are broken or frayed on specimens caught by purse seines. Standard-length measurements not only are more difficult to perform under adverse conditions aboard the vessels, but also are time consuming. Fork-length measurements, on the other hand, are readily obtained, and rarely are the median rays of the caudal fin damaged. Furthermore, the black pigment which marks the tips of the median caudal fin rays afford a precise endpoint for measurement. Accordingly, fork length was chosen as the measure of fish length.

Results of the first year's sampling had shown that there is a distinct tendency for fish of the same size and age to school together. Accordingly, the school was chosen as the basic unit of sampling. Furthermore, it was found that schools of similar size and age tend to occur together within an immediate area. In table 4, for example, are given the length frequency distributions of individual samples taken from seven separate boat catches made in different locations within Delaware Bay on the same day. The maximum distance between

5/ Fork length was measured from the tip of the snout (with the jaws closed) to the median rays in the fork of the caudal fin.

Total length is defined as the straight-line distance from the tip of the snout to the tip of the caudal fin with the dorsal and ventral rays pressed together.

Standard length is the length from the tip of the snout to the anterior swelling of the hypural plate.

Table 4.--Length frequency distributions of samples of Atlantic menhaden taken from seven different locations within Delaware Bay (September 9, 1952)

Length, millimeters	Sample number						
	0.37	0.38	0.39	0.40	0.41	0.42	0.43
175-179	-	-	1	-	-	-	-
180-184	-	-	1	-	-	-	-
185-189	-	-	-	-	1	1	-
190-194	-	2	7	-	1	-	2
195-199	5	3	11	3	12	11	7
200-204	7	23	32	20	17	17	22
205-209	19	34	26	28	25	18	23
210-214	35	20	14	22	33	33	24
215-219	24	10	3	18	8	17	17
220-224	8	6	4	8	2	2	4
225-229	1	2	1	1	1	1	1
230-234	1	-	-	-	-	-	-
Total . . .	100	100	100	100	100	100	100
Mean . . .	212	209	205	210	208	209	209

catch locations was 27 miles and the minimum distance, 3 miles. An analysis of variance (using coded values as outlined by Snedecor, 1946) indicated that samples were not drawn from a homogeneous population ($F = \frac{518.17}{49.90} = 10.38$, whereas P 0.05 = ca. 2.84). Four of the catches were separated by distances greater than 12 miles; however, three of the samples (0.38, 0.42, and 0.43) were taken from catches made within three miles of each other. The latter samples showed no statistical difference in variance.

Comparisons of samples taken from different localities, but landed at the same port, often were found to differ significantly in length, weight, and age composition. Furthermore, marked variability frequently occurred among samples from day to day. In view of these results, the system of sampling which we adopted in 1955 consisted of taking daily samples from a large number of schools over the range of the fishery. The number of samples obtained at each port was roughly proportional to both the number of vessels and the catch in each locality. The catches from which the samples were drawn were chosen at random; however, if two or more widely separated fishing areas were represented in the day's catch, a sample was obtained from each.

Further consideration was given to the number of fish to be measured so as to represent the size composition of the school from which the sample was drawn. An example is furnished by a sample of 500 fish drawn from a single school catch (Sample 0.48, Port Monmouth, N. J., September 18, 1952). The variance of the mean, 233 mm., was 117.9. For t .05, n = 20 fish furnishes an approximation of the minimum sample size required for estimating the mean to within 2 percent (Snedecor, 1946). To eliminate bias in the selection of fish for detailed measurements and scale samples, it was decided that 100 fish would be chosen to represent a regular sample. From the regular sample, 20 individuals would be selected by laying aside every fifth fish. Results have shown that samples thus collected are not materially biased.

To determine whether size stratification occurred in different parts of a vessel load four single-school catches were examined. Five samples, of 100 fish each, were drawn from different locations in the hold of each vessel (Appendix table 1). The vessel catches were chosen so as to represent different size groups of fish. An analysis of variance indicated no significant difference among the sample means within vessel catches ($F = \frac{140.22}{111.44} = 1.26$, whereas P 0.05 = 1.64). Figure 8 shows the age composition of the individual samples. It is obvious, without recourse to statistical procedures, that the various age groups were represented in the same proportions throughout the individual samples from a load. These preliminary results have been verified from additional material gathered in other localities along the coast.

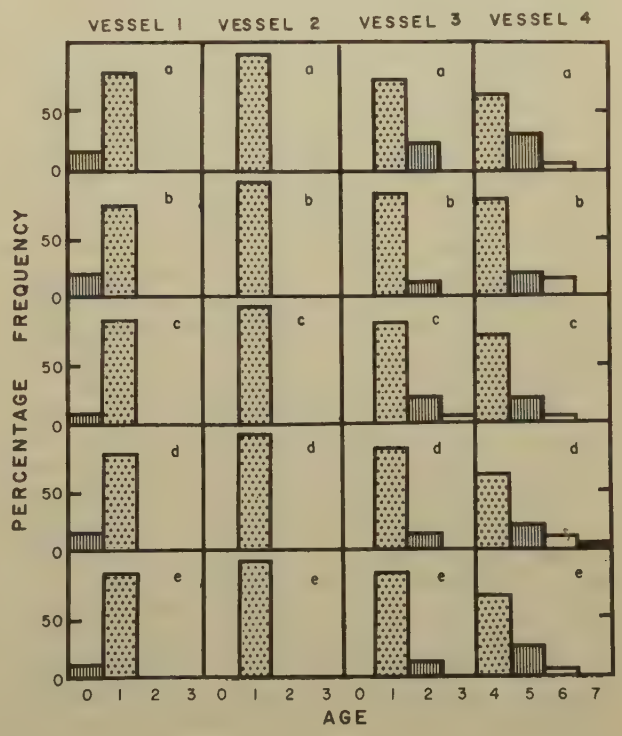

Figure 8.--Age composition from single-school catches.

Collection of Samples

Samples from the purse-seine catches were taken directly from the hold of the vessel. Fish were shoveled into buckets from the top of the load, after first removing the sun-dried fish from the upper layer. Each sample thus was presumed

to represent fish from the last school caught 6/.

The fork lengths of fish comprising the sample were measured to the next lower one-half centimeter (i.e. lengths between 240.0 and 244.9 mm. would be read 24.0 cm., etc.), except for every fifth fish which was laid aside. The 20 fish thus selected from each sample of 100 were examined to determine whether scales were present. If scales were missing from both sides of the body, another fish of the same half-centimeter size class was substituted. These individuals were measured to the nearest millimeter and weighed to the nearest gram; in addition, a scale sample was taken, and the sex and stage of sexual maturity were noted. The date and location of the catch also were recorded.

Scales were removed from the middle of the left side, below the insertion of the dorsal fin; or, if missing, from the right side. Individual scale samples were placed in 2-dram vials containing water to which a few drops of 2-percent phenol were added to prevent mold formation. The vials were inserted in wooden blocks for temporary storage, each block holding 20 vials. The blocks were identified by a corresponding number placed on the accompanying data sheet.

Usually six scales which were symmetrical and free from defects were selected from each fish and mounted dry between two glass slides. Ages were determined at the laboratory with the aid of an Eberbach projector at a magnification of 40 diameters. Ages were estimated from the number of rings present on the scales. Fish having scales without a ring were designed as age 0, those with one ring as age 1, etc. Since ring formation does not actually take place until spring or early summer, a virtual ring was credited at the edge of the scale commencing with January 1 until the new ring was visible (usually by May). Year classes were designated by the year of spring hatching. For example, a fish caught in July 1955 with one ring on the scales would be assigned to the 1954 year class. Validity of the scale rings as age indicators in the Atlantic menhaden has been established by McHugh, Oglesby, and Pacheco (1959) and June and Roithmayr (unpub. ms.) 7/.

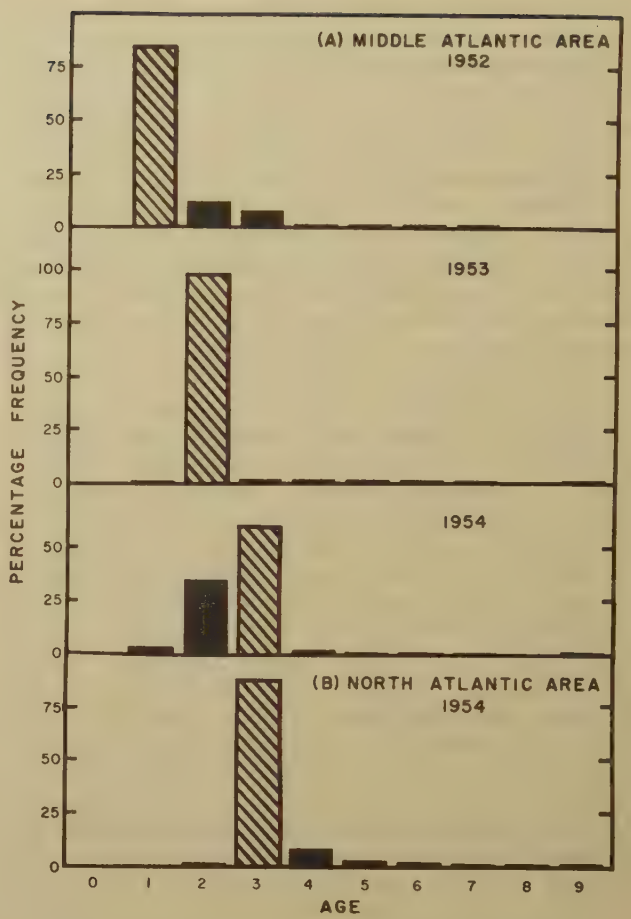

Figure 9.--Age composition of samples from menhaden purse-seine catches (A) Middle Atlantic Area, 1952-54 and (B) North Atlantic Area, 1954. The 1951 year class is indicated by the shaded column.

AGE COMPOSITION

The average percentage age composition of samples from the Middle Atlantic purse-seine catches from 1952 through 1954 and

6/ Samples from the pound-net catches probably represented more than one school, since a landing normally includes the accumulated catch of one or more day's fishing.

7/ Age determination of Atlantic menhaden from scales. U. S. Fish and Wildlife Service, Bureau of Commercial Fisheries, Biological Laboratory, Beaufort, N. C.

from the North Atlantic purse-seine catch for 1954 is given in Appendix table 2. Percentages represent numbers of fish 8/.

The Middle Atlantic catch during the period 1952-54 was characterized by the progression through the fishery of the dominant 1951 year class (fig. 9). It entered the fishery in strength at age 1 in 1952 and contributed an estimated 742.9 million fish to the catch in the area. Partly because of differential schooling and partly because of selectivity of purse-seine gear, this year class was not represented in true proportion to its actual abundance until the following year when, at age 2, it contributed an estimated 1,210.1 million fish to the catch. Production in the area in 1953 reached a record of over 378,000 tons. In 1954, as age-3 fish, the 1951 year class continued to dominate the Middle Atlantic catch and accounted for over four-fifths of the catch in the North Atlantic Area (bottom panel fig. 9). The catch in the latter area in that year established a modern record of 79,000 tons. The estimated contribution of this year class to the 1954 summer fishery in both areas exceeded 693.6 million fish.

The 1952 year class first appeared in the Middle Atlantic fishery in 1953, but it did not contribute appreciably to the catch until 1954 when, as age-2 fish, it comprised about one-third of the samples. The difference in its availability, as compared with the 1951 year class, may have been due to the overwhelming abundance of the latter.

During the 3-year period, 1952-54, older year classes were not represented in the Middle Atlantic purse-seine catches until fall when fishing shifted to schools of larger fish which appeared along the southern Long Island coast in September. Over a period of several weeks, the schools aggregated into large bodies in this locality and provided excellent fishing until middle or late October when the fish disappeared from the surface.

The average percentage age composition of samples from the entire Atlantic coast purse-seine catch in 1955, together with the calculated number of fish at each age, are summarized below.

	Age								
	0	1	2	3	4	5	6	7	8-10
Year class	1955	1954	1953	1952	1951	1950	1949	1948	1947-1945
Percent	24.71	20.68	34.21	8.73	10.01	1.23	0.35	0.06	0.02
No. of fish in millions	761.01	636.86	1,053.47	268.87	308.21	37.95	10.75	1.88	0.59

The 1953 year class (age 2) made the largest contribution to the Atlantic coast purse-seine fishery in 1955, accounting for over one-third of the total catch. It was followed in importance by the 1955 year class (age 0) which appeared for the first time in numbers in the fall fishery off the North Carolina coast. The 1954 year class (age 1) accounted for about one-fifth of the catch, while the 1951 (age 4) and 1952 (age 3) year classes also made important contributions.

The average percentage age composition of samples in each major area along the coast is given in Appendix table 3. The age composition of the purse-seine catches is shown graphically in figure 10 (p. 16). The numbers of fish at each age are given in Appendix table 4. In the South Atlantic Area the 1954 year class (age 1) formed the major portion of the summer purse-seine catch, followed in importance by the 1953 year class (age 2). Fish older than age 4 were not represented in samples from the summer fishery in the area. The 1953 and 1954 year classes comprised the bulk of the purse-seine catch in Chesapeake Bay, with the 1953 year class dominating. The 1953 year class also dominated the Middle

8/ Numbers of fish were calculated from the total weight landed at each plant in each week divided by the average weight of the fish during that week. The weekly percentage age composition of the samples was used in allocating the numbers of fish among the different year classes. These were summed to obtain the plant totals for the season. Plant totals were summed to obtain area totals.

Atlantic catch, but the 1951 (age 4) and 1952 (age 3) year classes also made substantial contributions. In the North Atlantic the 1951 year class formed over two-thirds of the purse-seine catch, with the 1950 (age 5) and the 1952 year classes each contributing about equally to the catch in the area. The 1953 and 1954 year classes were not represented in the samples from northern waters.

It is evident from the above that the age distributions in individual areas differed considerably. The youngest age groups, almost exclusively, contributed to the summer catches in southern waters, while successively older age groups dominated the catches farther northward. While these differences in age composition may be due, in part, to differential availability of certain age groups, they strongly suggest a differential migration of the older (and larger) fish during the summer months.

An influx of older fish into southern waters in late fall is evident from the change in age composition of the catch off the North Carolina coast (bottom panel of fig. 10). However, the striking feature of the age composition is the overwhelming dominance of the 1955 year class (age 0) which appeared for the first time in quantity in this locality during the last few weeks of the 1955 season. This age group comprised over four-fifths of the fall catch, and its estimated contribution was 742.3 million fish. The significance of the large number of these fish on the North Carolina grounds is not as yet known.

The average percentage age composition of samples from the 1955 spring (April and May) pound-net catches in Chesapeake Bay and in Raritan and Lower New York Bays is given below. The age composition of the early pound-net catch in Chesapeake Bay closely resembled that of the summer purse-seine catches in that area (cf. Appendix table 3 and fig. 10), although the older age groups were in greater evidence in spring. In contrast, the age composition of the early pound-net catches in Raritan and Lower New York Bays differed considerably from that of the summer purse-seine catches in the area, but closely resembled that of the North Atlantic summer purse-seine season (see Appendix table 3). This strongly suggests that the spring "run" of fish into northern New Jersey-southern Long Island waters subsequently moved into northern waters.

Locality	Age									
	0	1	2	3	4	5	6	7	8	9
Chesapeake Bay . . .	-	-	68.96	1.92	3.30	0.82	-	0.27	0 -	-
Raritan-Lower New York Bay	-	-	0.46	7.76	71.46	13.24	5.48	1.14	0.23	0.23

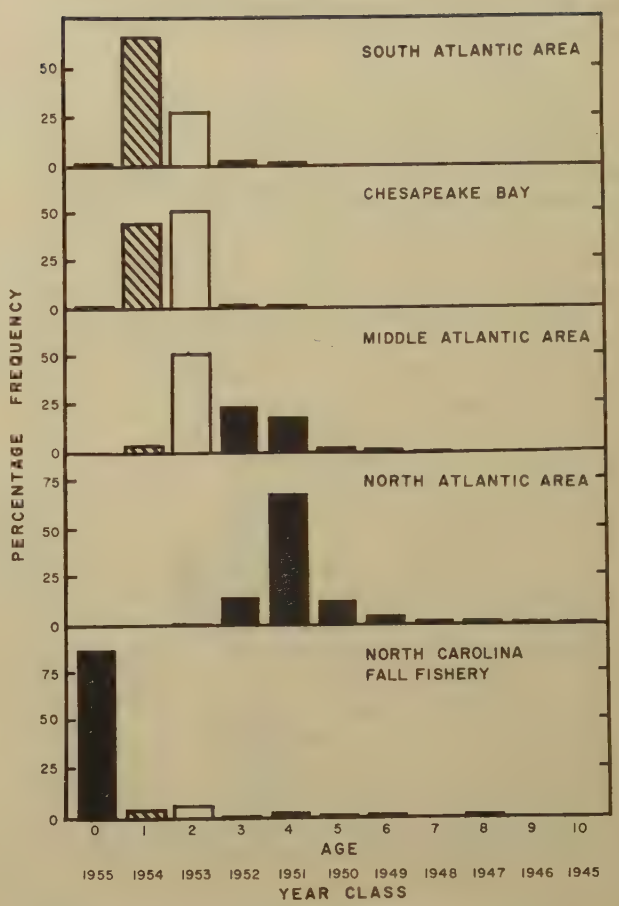

Figure 10.--Age composition of samples from Atlantic coast menhaden purse-seine catches, by area, 1955.

LENGTH AND WEIGHT COMPOSITION

The length and weight composition of each age group in samples from the Middle Atlantic purse-seine catches from 1952 through 1954 and

the North Atlantic purse-seine catch for 1954 are summarized in Appendix tables 5-8 and 16-19. The data are tabulated by sexes separately and sexes combined. Individuals which were aged, but for which sex was not determined, are included in the total for the age group.

The length composition of the Middle Atlantic purse-seine catch from 1952 through 1954 is illustrated in figure 11. The frequency curves show the progression from year to year of a single dominant mode through the catch. Evidence that the progression of this mode was due to the growth of the 1951 year class was furnished from an analysis of the age data (cf. fig. 9).

The length and weight composition of each age group in samples from the Atlantic coast purse-seine catch for 1955 are summarized in Appendix tables 9-13, 20, and 22-25. Data from the 1955 spring pound-net catches are tabulated separately in Appendix tables 15, 16, 21, and 26.

The length composition of the purse-seine catches in individual areas along the coast in 1955 is illustrated in figure 12. The outstanding feature of the length distributions is the marked diversity in position and shape of the curves for the different areas. Those representing the summer catches show a progressive increase in length of the fish from south to north, and the spread in length distribution tends to be greater in southern waters (South Atlantic and Chesapeake Bay). In general, the major modes represent the predominant age groups in the individual areas. It is obvious that the fishery in each area was supported by different groups of fish.

In the South Atlantic, fish in summer catches ranged from about 110 to 235 millimeters in length, with a dominant mode at

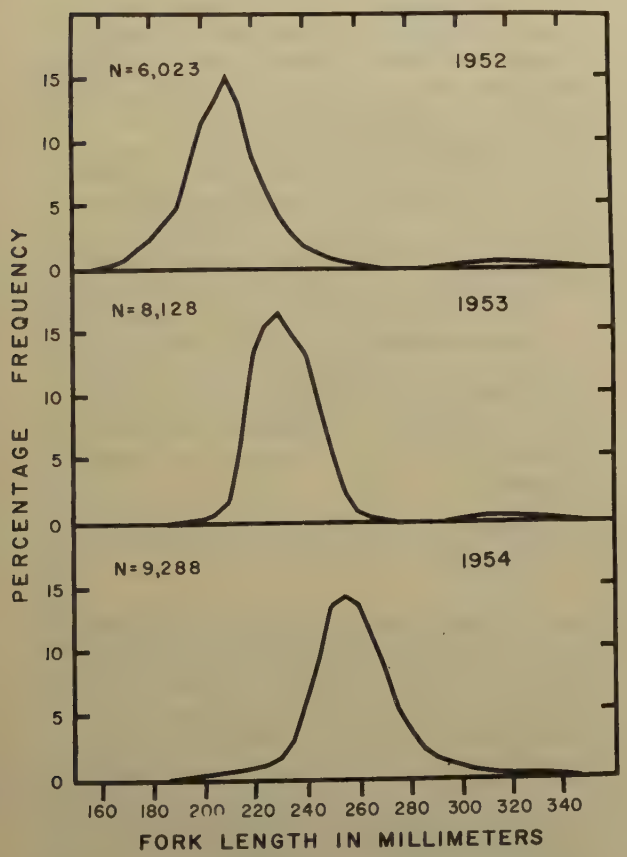

Figure 11.--Length composition of samples from Middle Atlantic menhaden purse-seine catches, 1952-54. The frequency polygons are based on the 100-fish samples.

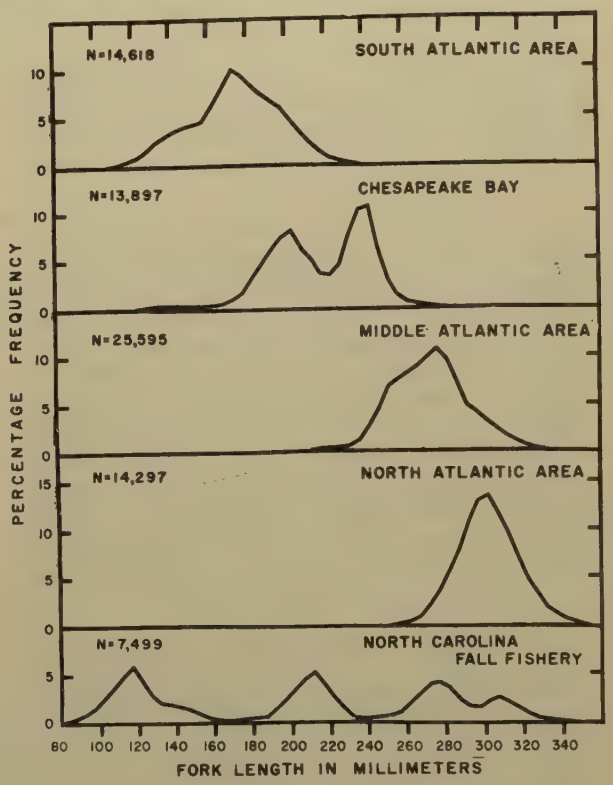

Figure 12.--Length composition of samples from Atlantic coast menhaden purse-seine catches, by area, 1955. The frequency polygons are based on the 100-fish samples.

about 172 mm. The curve for Chesapeake Bay shows two prominent modes, one at 202 mm., and the second at roughly 242 mm. In the Middle Atlantic the dominant mode appears at 278 mm., while in the North Atlantic, it occurs at roughly 302 mm. The length frequency distribution for the North Carolina fall fishery, in general, shows the presence of most of the size groups represented in the summer catches north of Cape Hatteras, thus demonstrating the southward migration of fish in the fall. The appearance of a new mode, at about 115 mm., represents young-of-the-year fish (age 0) which emigrated from estuarine nursery areas and appeared in the catch for the first time in large numbers.

Comparison of the average length and weight of individual year classes at different ages is furnished in the following tabulation based on samples from the Middle Atlantic purse-seine catches from 1952 through 1955 (see also Appendix tables 27-29 and 33). The dominant 1951 year class is underscored. The data show rather marked variation in average length and weight of fish of comparable age in the different years. The most striking feature, however, is that in every year, fish of the 1951 year class averaged lighter than those of adjacent year classes. A similar trend is evident in the North Atlantic Area in 1954 (Appendix table 30) and 1955 (Appendix table 34) as shown by the following tabulation:

Year	Average length (mm.) at age				Average weight (g.) at age			
	1	2	3	4	1	2	3	4
1952	209	233	-	-	170	234	-	-
1953	-	235	-	-	-	224	-	-
1954	223	254	282	304	202	303	354	564
1955	229	259	279	291	225	317	404	457

Year	Average length (mm.) at age			Average weight (g.) at age		
	2	3	4	2	3	4
1954	277	281	304	286	407	523
1955	277	287	301	401	426	494

Comparison of the average lengths and weights of fish in 1955 (Appendix tables 31-37) indicates that fish from the northern end of the range were larger and heavier at each age than those from the southern end of the range. Fish from the central part of the range were intermediate in average length and weight between the northern and southern areas. The data for all years further show that females were larger and heavier at older ages than the males, while at younger ages the males were slightly larger and heavier, although the difference was slight. Furthermore, the difference in average length and weight between the sexes was much greater in northern waters than in southern waters.

SUMMARY

1. A description of the menhaden fishing gear, methods, and seasons, is given.

2. Grounds most heavily fished along the Atlantic coast in 1955 were (1) off Cape Lookout, (2) Chesapeake Bay, (3) along the coast of Maryland, Delaware, and New Jersey, (4) Delaware Bay, (5) southern Long Island waters, and (6) Massachusetts Bay.

3. The 1955 catch of Atlantic menhaden (Brevoortia tyrannus) amounted to 701,000, of which 685,000 tons were taken by purse seines.

4. Apparent abundance (catch per purse-seine set) was highest on the North Carolina fall fishing grounds (38.7 tons) and lowest in South Atlantic waters (18.8 tons) during the summer season.

5. Methods of sampling the catch are described.

6. Age composition of samples taken from purse-seine catches showed that the 1951 year class dominated the Middle Atlantic Area from 1952 through 1954 and also comprised the bulk of the catch in the North Atlantic in 1954.

7. In 1955, the 1953 year class (age 2) accounted for over one-third of the entire Atlantic coast catch. The 1954 year class (age 1) constituted the bulk of the summer catch in the South

Atlantic in that year, while successively older age groups contributed to the catch in each more northerly locality. The 1955 year class (age 0) made an outstanding contribution to the fall fishery of the North Carolina coast.

8. Length composition of samples taken from the Middle Atlantic pound-net and purse-seine catches from 1952 through 1954 showed the growth and passage through the fishery of the dominant 1951 year class.

9. Length data for the entire coast in 1955 revealed a progressive increase in the size of fish comprising the catches from south to north. Most of the size groups which contributed to the summer fishery north of Cape Hatteras were represented in the fall catches off the North Carolina coast. In addition, young-of-the-year fish were represented in the catches in the latter area.

10. A comparison of the average lengths and weights indicated that fish from the northern end of the range were larger and heavier at each age than those from the southern end. Fish from the central part of the range were intermediate in average length and weight between the northern and southern areas.

11. Female Atlantic menhaden were found to be larger and heavier at older ages than the males, and this difference was greatest in the northern areas.

LITERATURE CITED

ANDERSON, ANDREW W., AND EDWARD A. POWER
1957. Fishery statistics of the United States, 1955. U. S. Fish and Wildlife Service, Statistical Digest 41, 446 pp.

JUNE, FRED C., AND JOHN W. REINTJES
1957. Survey of the ocean fisheries off Delaware Bay. U. S. Fish and Wildlife Service, Special Scientific Report--Fisheries No. 222, 55 pp.

McHUGH, J. LAURENCE, RAY T. OGLESBY, AND ANTHONY L. PACHECO
1959. Length, weight, and age composition of the menhaden catch in Virginia waters. Limnology and Oceanography, vol. 4, No. 2, pp. 145-162.

ROUNSEFELL, GEORGE A.
1948. Development of fishery statistics in the North Atlantic. U. S. Fish and Wildlife Service, Special Scientific Report No. 47, 27 pp.

SNEDECOR, GEORGE W.
1946. Statistical methods. Iowa State College, Ames, Iowa. 422 pp.

Appendix Table 1.--Length frequency distributions of samples from single-school catches

Fork length, (mm.)	Vessel 1					Vessel 2					Vessel 3					Vessel 4				
	a	b	c	d	e	a	b	c	d	e	a	b	c	d	e	a	b	c	d	e
120-124	2	1	-	2	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
125-129	11	10	7	12	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
130-134	29	21	25	22	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
135-139	19	18	31	18	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140-144	16	23	21	17	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
145-149	9	13	5	12	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
150-154	6	6	2	4	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
155-159	3	2	1	4	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
160-164	2	1	3	4	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
165-169	3	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
170-174	-	2	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
175-179	-	-	-	1	2	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
180-184	-	-	-	1	-	-	1	-	1	1	-	-	-	-	-	-	-	-	-	-
185-189	-	-	-	-	-	3	1	5	7	7	-	-	-	-	-	-	-	-	-	-
190-194	-	-	-	-	-	10	23	12	13	19	-	-	-	-	-	-	-	-	-	-
195-199	-	-	-	-	-	32	20	36	25	21	-	-	-	-	-	-	-	-	-	-
200-204	-	-	-	-	-	27	33	21	30	30	-	-	-	-	-	-	-	-	-	-
205-209	-	-	-	-	-	15	12	10	11	13	-	-	1	1	1	-	-	-	-	-
210-214	-	-	-	-	-	4	5	7	6	7	1	2	2	5	3	-	-	-	-	-
215-219	-	-	-	-	-	1	2	5	5	2	10	9	7	9	2	-	-	-	-	-
220-224	-	-	-	-	-	2	1	1	-	-	21	17	21	19	16	-	-	-	-	-
225-229	-	-	-	-	-	4	1	1	1	-	19	26	17	12	17	-	-	-	-	-
230-234	-	-	-	-	-	2	-	-	-	-	20	19	21	14	18	-	-	-	-	-
235-239	-	-	-	-	-	-	1	-	-	-	9	10	17	12	13	-	-	-	-	-
240-244	-	-	-	-	-	-	-	-	1	-	10	7	6	10	15	-	-	-	-	-
245-249	-	-	-	-	-	-	-	1	-	-	4	6	6	9	4	-	-	-	-	-
250-254	-	-	-	-	-	-	-	-	-	-	4	1	2	7	4	-	-	-	-	-
255-259	-	-	-	-	-	-	-	-	-	-	2	1	-	-	4	-	-	-	-	-
260-264	-	-	-	-	-	-	-	-	-	-	-	1	-	1	1	-	-	-	-	-
265-269	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-
270-274	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
275-279	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
280-284	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	-	1	-
285-289	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	3	1	3
290-294	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	7	9	10	7
295-299	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	14	15	13	13
300-304	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	15	18	18	11
305-309	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19	12	13	19	17
310-314	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	15	19	16	18
315-319	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	16	10	9	13
320-324	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	5	6	7	10
325-329	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	5	3	5	6
330-334	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	-	-
335-339	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	1	-
340-344	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	2
345-349	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-
350-354	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
355-359	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
360-364	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Mean(mm.)	139	141	140	141	139	203	201	201	201	200	231	231	231	232	235	309	310	308	307	309

Appendix Table 2.--Age composition (in percent)[1] of samples from catches by area, 1952-54

Year	Area	Age									
		0	1	2	3	4	5	6	7	8	9
1952 . .	Middle Atlantic . . .	0.09	84.59	12.29	1.61	0.38	0.47	0.28	0.28	-	-
1953 . .	Middle Atlantic . . .	-	0.30	98.05	0.58	0.30	0.30	0.39	0.06	-	0.06
1954 . .	Middle Atlantic . . .	-	3.06	35.36	59.02	1.48	0.74	0.23	0.06	-	0.06
	North Atlantic . . .	-	-	1.12	87.11	8.02	2.41	0.90	0.34	0.06	0.06

Appendix Table 3.--Age composition (in percent)[1] of samples from catches by area, 1955

PURSE SEINE

Area	Age										
	0	1	2	3	4	5	6	7	8	9	10
South Atlantic	1.66	65.22	27.02	3.32	2.77	-	-	-	-	-	-
Chesapeake Bay	1.63	44.77	51.30	1.54	0.69	0.06	-	-	-	-	-
Middle Atlantic	-	1.81	55.79	23.18	17.43	1.40	0.26	0.10	0.01	-	-
North Atlantic	-	-	0.25	13.94	67.55	12.84	4.65	0.54	0.17	0.01	0.04
North Carolina fall fishery	87.19	3.61	6.00	0.86	1.96	0.32	0.04	-	0.01	-	-
All	24.71	20.68	34.21	8.73	10.01	1.23	0.35	0.06	0.02	+	+

POUND NET

Chesapeake Bay	1.28	42.27	53.83	1.41	0.99	0.16	-	0.04	-	-	-
Middle Atlantic	-	0.11	4.62	10.72	65.87	13.38	3.98	0.80	0.26	0.26	-
North Atlantic	-	-	0.62	21.12	69.56	6.21	1.86	+	+	+	+
All	0.70	22.92	31.11	6.06	30.89	5.97	1.75	0.36	0.11	0.11	+

1/Based on numbers of fish at each age.

Appendix Table 4.--Numbers of fish (in millions) in catches by age and area[1/], 1955

PURSE SEINE

Area	Age											
	0	1	2	3	4	5	6	7	8	9	10	Total
South Atlantic . .	6.51	255.20	105.74	13.01	10.83	-	-	-	-	-	-	391.29
Chesapeake Bay . .	12.18	334.24	382.92	11.52	5.17	0.43	-	-	-	-	-	746.46
Middle Atlantic. .	-	16.66	513.31	213.26	160.40	12.90	2.43	0.96	0.12	-	-	920.04
North Atlantic . .	-	-	0.42	23.76	115.10	21.88	7.93	0.92	0.29	0.01	0.07	170.38
North Carolina fall fishery. .	742.32	30.76	51.08	7.32	17.71	2.74	0.39	-	0.10	-	-	851.42
Subtotal . .	761.01	636.86	1,053.47	268.87	308.21	37.95	10.75	1.88	0.51	0.01	0.07	3,079.59

POUND NET[2/]

Chesapeake Bay . .	0.31	10.20	12.99	0.34	0.24	0.04	-	0.01	-	-	-	24.13
Middle Atlantic. .	-	0.02	0.87	2.02	12.41	2.52	0.75	0.15	0.05	0.05	-	18.84
North Atlantic . .	-	-	0.01	0.34	1.12	0.10	0.03	+	+	+	+	1.61
Subtotal . .	0.31	10.22	13.87	2.70	13.77	2.66	0.78	0.16	0.05	0.05	-	44.58
Total . .	761.32	647.08	1,067.34	271.57	321.98	40.61	11.53	2.04	0.56	0.06	0.07	3,124.17

1/Numbers of fish at each plant locality summed to obtain area totals.
2/Numbers of fish calculated from mean weight of fish in all samples from each locality. Percentage age composition of all samples from each locality used in apportioning fish among various age classes. Locality totals summed to obtain area totals.

Appendix Table 5.--Length frequency distributions by age and sex of samples from purse-seine catches, Middle Atlantic Area, 1952
(M, males; F, females; T, total, includes fish not sexed.)

Fork length, (mm.)	Age																					Total
	1			2			3			4			5			6			7			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
165-169	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
170-174	-	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
175-179	-	-	13	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
180-184	3	4	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19
185-189	14	9	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35
190-194	22	17	49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	49
195-199	44	34	86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	86
200-204	62	58	127	-	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	130
205-209	92	67	161	2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	167
210-214	87	62	152	-	1	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	167
215-219	48	55	104	1	3	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	126
220-224	36	35	72	3	5	14	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	89
225-229	16	22	38	5	5	16	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	55
230-234	11	5	16	5	6	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29
235-239	2	9	11	4	7	14	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	26
240-244	-	3	3	5	3	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
245-249	-	1	1	6	4	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
250-254	-	-	-	2	3	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
255-259	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
260-264	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1
265-269	-	-	-	-	1	1	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	4
270-274	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
275-279	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
280-284	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1
285-289	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
290-294	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
295-299	-	-	-	-	-	-	3	-	3	1	-	1	-	-	-	-	-	-	-	-	-	4
300-304	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1
305-309	-	-	-	-	-	-	1	-	1	-	-	-	1	-	1	-	-	-	-	-	-	2
310-314	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
315-319	-	-	-	-	-	-	-	-	-	1	1	2	1	1	2	-	-	-	1	-	1	5
320-324	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
325-329	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	1	1	-	1	1	3
330-334	-	-	-	-	-	-	-		-	-	-	-	-	1	1	1	-	1	-	-	-	2
335-339	-	-	-	-	-	-	-		-	-	-	-	1	-	1	-	1	1	-	-	-	2
340-344	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
345-349	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1
Total..	437	381	895	33	42	130	9	6	17	2	1	4	3	2	5	1	2	3	1	2	3	1057

Appendix Table 6.--Length frequency distributions by age and sex of samples from purse-seine catches, Middle Atlantic Area, 1953

Fork length, (mm.)	Age																									Total
	1			2			3			4			5			6			7			8			9			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
195-199	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
200-204	1	-	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
205-209	-	-	-	4	3	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
210-214	-	-	-	10	9	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19
215-219	-	-	-	65	36	102	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	103
220-224	1	1	2	95	96	191	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	193
225-229	-	-	-	105	101	206	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	206
230-234	-	-	-	119	117	236	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	236
235-239	-	-	-	117	113	230	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	231
240-244	-	-	-	106	102	209	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	209
245-249	-	-	-	75	86	161	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	162
250-254	-	1	1	28	67	95	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	97
255-259	-	-	-	11	27	38	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39
260-264	-	-	-	3	4	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
265-269	-	-	-	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
270-274	-	-	-	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
275-279	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
280-284	-	-	-	2	-	2	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
285-289	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
290-294	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
295-299	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
300-304	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
305-309	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
310-314	-	-	-	-	-	-	-	1	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
315-319	-	-	-	-	-	-	-	-	-	-	1	1	1	-	1	1	-	1	-	-	-	-	-	-	-	-	-	3
320-324	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	2
325-329	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
330-334	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	1	1	2	-	1	1	-	-	-	-	-	-	4
335-339	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	2	2	-	-	-	-	-	-	-	-	-	3
340-344	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	1	1	2
345-349	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
350-354	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
355-359	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1
Total . .	2	2	4	743	764	1509	3	6	9	2	2	4	2	2	4	3	3	6	-	2	2	-	-	-	-	1	1	1539

Appendix Table 7.--Length frequency distributions by age and sex of samples from purse-seine catches, Middle Atlantic Area, 1954

Fork length, (mm.)	Age																											Total
	1			2			3			4			5			6			7			8			9			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
190-194	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
195-199	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
200-204	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
205-209	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
210-214	5	2	7	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
215-219	8	2	10	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13
220-224	8	3	11	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
225-229	4	3	7	6	2	8	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
230-234	2	3	5	4	5	9	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
235-239	4	1	5	19	6	25	8	1	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39
240-244	1	1	2	54	18	72	24	7	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	105
245-249	-	-	-	59	43	103	33	16	49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	152
250-254	-	-	-	45	60	105	61	54	115	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	220
255-259	-	-	-	45	56	101	72	73	145	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	247
260-264	-	1	1	36	62	98	91	86	177	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	276
265-269	1	-	1	20	33	54	74	68	142	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	198
270-274	-	-	-	8	13	21	47	75	122	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	143
275-279	-	-	-	3	16	19	31	47	78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	97
280-284	-	-	-	-	2	2	29	41	70	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	73
285-289	-	-	-	-	1	1	11	20	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32
290-294	-	-	-	-	-	-	9	21	30	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31
295-299	-	-	-	-	-	-	7	13	20	2	-	2	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	23
300-304	-	-	-	-	-	-	4	6	10	5	1	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
305-309	-	-	-	-	-	-	2	3	5	2	1	3	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	10
310-314	-	-	-	-	-	-	-	1	1	1	2	3	2	3	5	-	-	-	-	-	-	-	-	-	-	-	-	9
315-320	-	-	-	-	-	-	-	1	1	-	6	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
320-324	-	-	-	-	-	-	-	-	-	-	2	2	1	-	1	-	1	1	1	-	1	-	-	-	-	-	-	5
325-329	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	-	-	-	-	-	-	-	-	2
230-234	-	-	-	-	-	-	-	1	1	-	-	-	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	3
335-339	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1
340-344	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1
345-349	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1
350-354	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1
Total . .	37	17	54	300	321	623	505	535	1040	11	15	26	7	6	13	-	4	4	1	-	1	-	-	-	-	1	1	1762

Appendix Table 8.--Length frequency distributions by age and sex of samples from purse-seine catches, North Atlantic Area, 1954

Fork length, (mm.)	Age																								Total
	2			3			4			5			6			7			8			9			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
255-259	-	-	-	3	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
260-264	-	-	-	17	4	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21
265-269	3	-	3	59	15	74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	77
270-274	2	4	6	162	67	229	1	-	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	237
275-279	5	-	5	175	144	319	1	1	2	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	327
280-284	-	2	2	166	192	358	6	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368
285-289	-	2	2	97	172	269	7	2	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	280
290-294	1	1	2	35	125	160	6	4	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	172
295-299	-	-	-	7	61	68	12	8	20	4	1	5	-	-	-	-	-	-	-	-	-	-	-	-	93
300-304	-	-	-	4	27	31	13	8	21	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	53
305-309	-	-	-	2	9	11	9	12	21	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	33
310-314	-	-	-	3	5	8	8	19	27	5	2	7	-	-	-	-	-	-	1	-	1	-	-	-	43
315-319	-	-	-	-	2	2	4	10	14	2	3	5	2	-	2	-	-	-	-	-	-	-	-	-	23
320-324	-	-	-	-	1	1	-	5	5	2	8	10	-	-	-	2	-	2	-	-	-	-	-	-	18
325-329	-	-	-	-	-	-	1	1	2	2	3	5	-	4	4	-	-	-	-	-	-	-	-	-	11
330-334	-	-	-	-	-	-	-	2	2	1	2	3	4	-	4	1	-	1	-	-	-	-	1	1	11
335-339	-	-	-	-	-	-	-	1	1	-	2	2	1	1	2	-	1	1	-	-	-	-	-	-	6
340-344	-	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	2
345-349	-	-	-	-	-	-	-	-	-	-	1	1	-	2	2	-	1	1	-	-	-	-	-	-	4
350-354	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	-	-	-	-	-	2
Total . :	11	9	20	730	824	1554	68	75	143	18	25	43	7	9	16	3	3	6	1	-	1	-	1	1	1784

Appendix Table 9.--Length frequency distributions by age and sex of samples from purse-seine catches, South Atlantic Area, 1955

Fork length, (mm.)	Age															Total
	0			1			2			3			4			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
105-109	1	-	1	-	2	2	-	-	-	-	-	-	-	-	-	3
110-114	2	-	2	-	2	2	-	-	-	-	-	-	-	-	-	4
115-119	5	1	6	-	1	2	-	-	-	-	-	-	-	-	-	8
120-124	4	4	8	4	6	17	-	-	-	-	-	-	-	-	-	25
125-129	-	2	2	5	14	30	-	-	-	-	-	-	-	-	-	32
130-134	4	1	5	15	32	54	1	-	1	-	-	-	-	-	-	60
135-139	1	1	2	35	32	74	-	-	-	-	-	-	-	-	-	76
140-144	1	1	2	24	43	69	-	1	1	-	-	-	-	-	-	72
145-149	-	1	1	41	50	94	-	-	-	-	-	-	-	-	-	95
150-154	2	-	2	55	65	123	-	2	2	-	-	-	-	-	-	127
155-159	-	-	-	51	61	115	-	-	-	-	-	-	-	-	-	115
160-164	-	-	-	91	86	180	2	2	4	-	-	-	-	-	-	184
165-169	-	-	-	117	97	218	4	2	6	-	1	1	-	-	-	225
170-174	-	-	-	119	134	262	9	12	21	-	-	-	-	-	-	283
175-179	-	-	-	97	117	220	19	21	40	1	-	1	-	-	-	261
180-184	-	-	-	85	101	191	33	36	81	1	1	2	-	1	1	275
185-189	-	-	-	48	61	110	44	53	97	1	1	2	1	-	1	210
190-194	-	-	-	23	48	71	63	62	126	1	2	3	1	1	2	202
195-199	-	-	-	14	19	33	55	71	127	3	5	8	1	1	2	170
200-204	-	-	-	14	11	25	52	79	132	8	6	14	3	6	9	180
205-209	-	-	-	1	3	4	16	38	54	6	5	11	7	6	13	82
210-214	-	-	-	2	5	7	18	26	44	12	8	20	9	14	23	94
215-219	-	-	-	1	1	2	6	9	15	3	15	18	6	7	13	48
220-224	-	-	-	1	2	3	3	7	10	3	3	6	5	8	13	32
225-229	-	-	-	-	-	-	-	5	5	1	-	1	1	1	2	8
230-234	-	-	-	-	-	-	1	4	5	-	3	3	-	-	-	8
235-239	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
240-244	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
245-249	-	-	-	-	1	1	-	1	1	-	-	-	-	-	-	2
Total . .	20	11	31	843	994	1909	326	441	772	40	50	90	34	45	79	2881

Appendix Table 10.--Length frequency distributions by age and sex of samples from purse-seine catches, Chesapeake Bay Area, 1955

Fork length, (mm.)	Age																		Total
	0			1			2			3			4			5			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
115-119	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
120-124	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
125-129	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
130-134	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
135-139	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
140-144	4	1	5	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	6
145-149	7	5	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13
150-154	3	1	6	2	1	4	-	-	-	-	-	-	-	-	-	-	-	-	10
155-159	2	3	5	2	1	4	-	-	-	-	-	-	-	-	-	-	-	-	9
160-164	5	-	5	3	5	9	-	-	-	-	-	-	-	-	-	-	-	-	14
165-169	2	-	2	4	6	11	-	-	-	-	-	-	-	-	-	-	-	-	13
170-174	-	-	-	11	12	25	-	-	-	-	-	-	-	-	-	-	-	-	25
175-179	-	-	-	23	20	46	-	2	2	-	-	-	-	-	-	-	-	-	48
180-184	1	-	1	29	32	61	1	1	2	-	-	-	-	-	-	-	-	-	64
185-189	-	-	-	40	73	114	1	-	1	-	-	-	-	-	-	-	-	-	115
190-194	-	-	-	79	74	154	2	3	5	-	-	-	-	-	-	-	-	-	159
195-199	-	-	-	101	89	190	5	5	11	-	1	1	-	-	-	-	-	-	202
200-204	-	-	-	93	78	171	11	11	22	-	-	-	-	-	-	-	-	-	193
205-209	-	-	-	70	73	143	7	13	20	1	-	1	-	-	-	-	-	-	164
210-214	-	-	-	42	73	115	11	7	18	-	1	1	-	-	-	-	-	-	134
215-219	-	-	-	36	52	88	18	21	39	1	-	1	1	-	1	-	-	-	129
220-224	-	-	-	17	28	45	36	34	70	1	1	2	-	-	-	-	-	-	117
225-229	-	-	-	6	7	13	65	48	113	-	-	-	-	-	-	-	-	-	126
230-234	-	-	-	2	3	5	122	98	220	-	3	3	-	-	-	-	-	-	228
235-239	-	-	-	-	-	-	143	121	265	2	2	4	1	-	1	1	-	1	271
240-244	-	-	-	-	1	1	130	174	306	1	3	4	-	-	-	-	-	-	311
245-249	-	-	-	-	-	-	56	92	148	2	-	2	2	-	2	-	1	1	153
250-254	-	-	-	-	-	-	28	69	97	2	8	10	3	4	7	-	-	-	114
255-259	-	-	-	-	-	-	10	27	37	1	2	3	4	2	6	-	-	-	46
260-264	-	-	-	3	-	3	5	6	11	1	1	2	-	1	1	-	-	-	17
265-269	-	-	-	2	-	2	3	2	5	-	-	-	-	-	-	-	-	-	7
270-274	-	-	-	-	1	1	-	1	1	-	-	-	-	-	-	-	-	-	2
275-279	-	-	-	-	-	-	2	4	6	-	1	1	-	-	-	-	-	-	7
280-284	-	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-	2
285-289	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1
290-294	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	1
Total . .	25	10	40	566	629	1206	657	740	1401	12	25	37	11	7	18	1	1	2	2704

Appendix Table 11.--Length frequency distributions by age and sex of samples from purse-seine catches, Middle Atlantic Area, 1955

Fork length, (mm.)	Age																							Total
	1			2			3			4			5			6			7			8			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
185-189	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
190-194	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
195-199	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
200-204	2	-	2	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
205-209	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
210-214	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
215-219	4	3	7	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
220-224	4	2	6	5	3	8	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
225-229	4	1	5	8	4	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17
230-234	2	6	8	14	8	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30
235-239	4	1	5	35	18	53	3	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	61
240-244	3	3	6	85	43	130	3	2	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	141
245-249	1	4	5	109	107	218	9	2	11	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	235
250-254	-	3	3	183	139	323	11	13	24	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	352
255-259	1	-	1	185	135	321	33	8	42	8	4	12	-	-	-	-	-	-	-	-	-	-	-	-	376
260-264	-	-	-	140	132	273	55	22	77	22	6	28	1	-	1	-	-	-	-	-	-	-	-	-	379
265-269	-	1	1	136	132	268	83	45	128	30	18	48	2	1	3	1	-	1	-	-	-	-	-	-	449
270-274	-	-	-	73	94	167	128	81	210	63	21	84	6	3	9	-	-	-	-	-	-	-	-	-	470
275-279	-	-	-	40	62	102	140	122	262	84	52	136	2	6	8	-	-	-	-	-	-	-	-	-	508
280-284	-	-	-	31	40	71	117	167	284	91	102	194	7	5	12	-	-	-	-	-	-	-	-	-	561
285-289	-	-	-	8	19	27	59	117	176	77	80	157	7	6	13	1	-	1	-	-	-	-	-	-	374
290-294	-	-	-	5	10	15	29	69	98	77	82	159	3	3	6	-	1	1	-	-	-	-	-	-	279
295-299	-	-	-	1	5	6	20	50	70	57	90	147	5	5	10	-	-	-	-	-	-	-	-	-	233
300-304	-	-	-	2	1	3	7	23	30	38	85	123	10	3	13	-	2	2	-	-	-	-	-	-	171
305-309	-	-	-	-	1	1	5	20	25	30	76	106	8	5	13	1	1	2	-	-	-	-	-	-	147
310-314	-	-	-	-	-	-	-	11	11	7	60	67	3	11	14	-	1	1	-	-	-	1	-	1	94
315-319	-	-	-	-	-	-	1	3	4	1	41	42	1	6	7	1	4	5	1	-	1	-	-	-	59
320-324	-	-	-	-	-	-	-	-	-	1	25	26	3	9	12	-	2	2	1	1	2	-	-	-	42
325-329	-	-	-	-	-	-	-	-	-	-	6	6	1	2	3	-	3	3	-	1	1	-	-	-	13
330-334	-	-	-	-	-	-	-	-	-	-	-	-	2	3	5	-	2	2	-	1	1	-	-	-	8
335-339	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	-	-	-	1	1	-	-	-	3
340-344	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	1	1	-	-	-	2
345-349	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	-	-	2
350-354	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	1
Total . .	31	25	56	1062	957	2026	703	757	1462	588	750	1339	61	70	131	4	17	21	2	7	9	1	-	1	5045

Appendix Table 12.--Length frequency distributions by age and sex of samples from purse-seine catches, North Atlantic Area, 1955

Fork length, (mm.)	Age																									Total
	2			3			4			5			6			7			8			9			10			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
255-259	1	-	1	2	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
260-264	1	-	1	2	3	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
265-269	1	1	2	11	5	17	7	1	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27
270-274	1	-	1	14	8	22	16	3	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42
275-279	1	-	1	31	31	62	22	9	31	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	96
280-284	-	-	-	30	17	47	52	14	66	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	--	-	-	115
285-289	2	-	2	34	36	70	93	30	123	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	196
290-294	-	1	1	18	33	52	135	67	202	4	3	7	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	263
295-299	-	-	-	18	30	48	166	121	287	13	3	16	3	1	4	-	-	-	-	-	-	-	-	-	-	-	-	355
300-304	1	-	1	11	9	21	135	156	293	24	11	35	4	3	7	-	-	-	-	-	-	-	-	-	-	-	-	357
305-309	-	-	-	5	9	14	82	190	273	40	16	56	12	1	13	-	1	1	-	-	-	-	-	-	-	-	-	357
310-314	-	-	-	1	10	11	45	137	182	42	44	86	11	9	20	4	2	6	-	-	-	-	-	-	-	-	-	305
315-319	-	-	-	-	2	2	12	87	99	29	51	81	12	9	21	2	1	3	-	-	-	-	-	-	-	-	-	206
320-324	-	-	-	-	-	-	5	34	39	17	45	62	10	21	31	3	-	3	-	-	-	-	-	-	-	-	-	135
325-329	-	-	-	-	-	-	2	18	20	6	49	55	8	20	28	6	5	11	3	1	4	-	-	-	-	-	-	118
330-334	-	-	-	-	-	-	-	3	3	1	20	21	5	19	24	2	6	8	-	-	-	-	-	-	-	1	1	57
335-339	-	-	-	-	-	-	1	2	3	1	7	8	5	14	19	-	8	8	-	4	4	2	-	2	-	-	-	44
340-344	-	-	-	-	-	-	-	-	-	1	6	7	2	4	6	1	6	7	1	2	3	-	-	-	1	-	1	24
345-349	-	-	-	-	-	-	-	-	-	-	2	2	-	5	5	-	1	1	-	-	-	-	-	-	-	-	-	8
350-354	-	-	-	-	-	-	-	1	1	-	1	1	-	1	1	1	1	2	-	1	1	-	1	1	-	-	-	7
355-359	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
360-364	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	1
Total . . .	8	2	10	177	195	375	773	873	1649	180	261	442	73	107	180	19	31	50	4	8	12	2	2	4	1	1	2	2724

Appendix Table 13.--Length frequency distributions by age and sex of samples from purse-seine catches, North Carolina fall fishery, 1955

Fork length, (mm.)	Age																									Total
	0			1			2			3			4			5			6			7			8			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
75- 79	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80- 84	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
85- 89	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
90- 94	4	1	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
95- 99	9	2	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
100-104	10	11	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24
105-109	16	16	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34
110-114	36	29	67	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	68
115-119	23	39	73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	73
120-124	31	20	59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	59
125-129	18	15	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37
130-134	9	7	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19
135-139	9	10	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19
140-144	9	10	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19
145-149	9	6	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17
150-154	8	7	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15
155-159	1	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
160-164	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
165-169	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
170-174	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
175-179	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
180-184	-	1	1	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
185-189	1	-	1	6	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
190-194	-	1	1	6	2	8	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
195-199	-	-	-	24	6	30	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32
200-204	-	-	-	24	19	43	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	46
205-209	-	-	-	33	29	62	8	2	10	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	73
210-214	-	-	-	38	16	54	16	10	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80
215-219	-	-	-	15	24	39	15	8	23	1	1	2	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	65
220-224	-	-	-	2	7	9	11	15	26	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36

Appendix Table 13.--Length frequency distributions by age and sex of samples from purse-seine catches, North Carolina fall fishery, 1955 (continued)

Fork length, (mm.)	Age																											Total
	0			1			2			3			4			5			6			7			8			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
225-229	-	-	-	-	2	2	6	7	13	2	2	4	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	20
230-234	-	-	-	1	1	2	-	4	4	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	7
235-239	-	-	-	-	2	2	2	1	3	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
240-244	-	-	-	-	-	-	2	5	7	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
245-249	-	-	-	1	-	1	5	4	9	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
250-254	-	-	-	-	1	1	4	2	6	1	2	3	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	11
255-259	-	-	-	-	1	1	8	6	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15
260-264	-	-	-	-	1	1	17	-	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18
265-269	-	-	-	2	1	3	24	12	36	2	-	2	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	42
270-274	-	-	-	-	-	-	37	27	64	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66
275-279	-	-	-	-	-	-	23	22	45	-	-	-	3	1	4	-	-	-	-	-	-	-	-	-	-	-	-	49
280-284	-	-	-	-	-	-	18	36	54	4	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58
285-289	-	-	-	-	-	-	7	16	23	2	1	3	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	29
290-294	-	-	-	-	-	-	5	7	12	4	5	9	15	3	18	-	1	1	-	-	-	-	-	-	-	-	-	40
295-299	-	-	-	-	-	-	1	-	1	2	2	4	9	8	17	1	-	1	-	-	-	-	-	-	-	-	-	23
300-304	-	-	-	-	-	-	-	3	3	4	2	6	16	17	33	3	-	3	-	-	-	-	-	-	-	-	-	45
305-309	-	-	-	-	-	-	-	-	-	3	4	7	13	19	32	-	1	1	-	-	-	-	-	-	-	-	-	40
310-314	-	-	-	-	-	-	-	1	1	-	5	5	6	12	18	1	-	1	-	-	-	-	-	-	-	-	-	25
315-319	-	-	-	-	-	-	-	-	-	-	2	2	2	5	7	4	-	4	1	1	2	-	-	-	-	-	-	15
320-324	-	-	-	-	-	-	-	-	-	-	2	2	2	3	5	2	5	7	1	-	1	-	-	-	-	-	-	15
325-329	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	1	-	1	-	-	-	-	-	-	4
330-334	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1
335-339	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1
340-344	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	1
345-349	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total . . .	197	188	422	155	115	270	214	190	404	30	32	62	70	72	142	11	12	23	3	1	4	-	-	-	1	-	1	1328

Appendix Table 14.--Length frequency distributions by age and sex of samples from spring pound-net catches, Chesapeake Bay Area, 1955

Fork length (mm.)	Age																					Total
	1			2			3			4			5			6			7			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
130-134	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
135-139	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140-144	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
145-149	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
150-154	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
155-159	2	4	6	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
160-164	6	5	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
165-169	8	9	17	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19
170-174	7	15	22	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23
175-179	7	6	13	2	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17
180-184	-	5	5	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
185-189	1	3	4	1	2	3	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	8
190-194	2	3	5	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
195-199	1	1	2	1	3	4	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	7
200-204	-	2	2	5	5	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
205-209	-	-	-	5	11	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
210-214	-	1	1	12	13	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26
215-219	-	-	-	24	23	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47
220-224	-	-	-	19	24	43	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	44
225-229	-	-	-	19	20	39	1	-	1	1	-	1	-	1	1	-	-	-	-	-	-	42
230-234	-	-	-	9	15	24	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	26
235-239	-	-	-	7	11	18	-	-	-	-	2	2	-	-	-	-	-	-	-	-	-	20
240-244	-	-	-	4	2	6	-	-	-	1	1	2	-	1	1	-	-	-	-	-	-	9
245-249	-	-	-	-	1	1	-	1	1	-	1	1	-	-	-	-	-	-	-	1	1	4
250-254	-	-	-	-	-	-	1	-	1	1	1	2	-	-	-	-	-	-	-	-	-	3
255-259	-	-	-	-	-	-	-	-	-	1	2	3	-	-	-	-	-	-	-	-	-	3
260-264	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
265-269	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
270-274	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
275-279	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1
Total . .	35	55	90	112	138	250	2	5	7	5	7	12	-	3	3	-	-	-	-	1	1	363

Appendix Table 15.--Length frequency distributions by age and sex of samples from spring pound-net catches, Middle Atlantic Area, 1955

Fork length, (mm.)	Age																								Total
	2			3			4			5			6			7			8			9			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
240-244	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
245-249	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
250-254	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
255-259	-	-	-	3	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
260-264	-	-	-	-	-	-	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
265-269	-	-	-	1	-	1	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
270-274	-	-	-	2	3	5	4	1	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
275-279	-	-	-	3	5	8	6	8	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22
280-284	-	-	-	6	1	7	21	3	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31
285-289	-	-	-	1	3	4	25	11	36	2	1	3	1	-	1	-	-	-	-	-	-	-	-	-	44
290-294	-	-	-	-	3	3	37	34	71	4	1	5	-	-	-	-	-	-	-	-	-	-	-	-	79
295-299	-	-	-	1	1	2	29	38	67	5	1	6	1	-	1	-	-	-	-	-	-	-	-	-	76
300-304	-	-	-	-	-	-	8	41	49	5	2	7	2	1	3	-	-	-	-	-	-	-	-	-	59
305-309	-	-	-	-	-	-	4	27	31	4	4	8	-	1	1	-	-	-	-	-	-	-	-	-	40
310-314	-	-	-	-	1	1	1	6	7	-	7	7	-	-	-	-	-	-	-	-	-	-	-	-	15
315-319	-	-	-	-	-	-	1	3	4	7	6	13	2	2	4	-	-	-	-	-	-	-	-	-	21
320-324	-	-	-	-	-	-	-	2	2	-	3	3	1	4	5	1	-	1	-	-	-	-	-	-	11
325-329	-	-	-	-	-	-	-	-	-	-	4	4	-	2	2	-	-	-	-	-	-	-	-	-	6
330-334	-	-	-	-	-	-	-	-	-	-	1	1	1	3	4	-	-	-	-	-	-	-	-	-	5
335-339	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	2	2	-	1	1	-	1	1	6
340-344	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	2	-	-	-	-	-	-	3
345-349	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1
Total . .	1	1	2	17	17	34	138	175	313	27	31	58	8	16	24	2	3	5	-	1	1	-	1	1	438

Appendix Table 16.--Weight frequency distributions by age and sex of samples from purse-seine catches, Middle Atlantic Area, 1952

Weight, (g.)	Age																					Total
	1			2			3			4			5			6			7			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
80- 89	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
90- 99	-	1	15	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
100-109	5	4	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24
110-119	4	5	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25
120-129	22	18	51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	51
130-139	34	26	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	61
140-149	32	33	70	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71
150-159	49	37	89	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	92
160-169	52	41	96	1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	98
170-179	43	31	75	1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	79
180-189	42	40	82	-	1	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	88
190-199	23	16	39	-	1	5	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	47
200-209	25	23	48	5	3	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	61
210-219	8	13	21	3	3	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35
220-229	12	10	22	2	4	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31
230-239	10	4	14	3	5	10	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	25
240-249	3	3	6	2	5	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15
250-259	3	2	5	6	4	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
260-269	-	2	2	-	2	2	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	5
270-279	-	-	-	3	2	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
280-289	-	3	3	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
290-299	-	-	-	1	-	2	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	3
300-309	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
310-319	-	-	-	1	1	2	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	3
320-329	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
330-339	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
340-349	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
350-359	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
360-369	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
370-379	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1
380-389	-	-	-	-	-	-	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	2
390-399	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix Table 16.--Weight frequency distributions by age and sex of samples from purse-seine catches, Middle Atlantic Area, 1952 (continued)

Weight, (g.)	Age																					Total
	1			2			3			4			5			6			7			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
400-409	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
410-419	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
420-429	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
430-439	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
440-449	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
450-459	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
460-469	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
470-479	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
480-489	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
490-499	-	-	-	-	-	-	2	-	2	1	-	1	-	-	-	-	-	-	-	-	-	3
500-509	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	1
510-519	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
520-529	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
530-539	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	1
540-549	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
550-559	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1	-	1	1	-	1	3
560-569	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	1	1	3
570-579	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	1
580-589	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
590-599	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
600-609	-	-	-	-	-	-	-	-	-	1	1	2	-	-	-	-	-	-	-	-	-	2
610-619	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
620-629	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
630-639	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
640-649	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
650-659	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
660-669	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1
670-679	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
680-689	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1
690-699	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
700-709	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
710-719	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	1
720-729	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
730-739	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
740-749	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
750-759	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
760-769	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1
Total . .	367	312	754	31	37	105	9	6	16	2	1	4	3	2	5	1	2	3	1	2	3	890

Appendix Table 17.--Weight frequency distributions by age and sex of samples from purse-seine catches, Middle Atlantic Area, 1953

Weight, (g.)	Age																									Total
	1			2			3			4			5			6			7			8			9			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
130-139	-	-	-	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
140-149	1	-	1	5	1	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
150-159	-	-	-	4	3	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
160-169	-	-	-	17	19	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37
170-179	-	-	-	30	27	57	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58
180-189	-	-	-	40	40	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80
190-199	1	1	2	57	50	107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	109
200-209	-	-	-	59	65	124	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	124
210-219	-	-	-	51	53	105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	105
220-229	-	-	-	62	46	108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	108
230-239	-	-	-	39	26	65	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66
240-249	-	-	-	30	31	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	61
250-259	-	-	-	21	29	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50
260-269	-	-	-	26	36	62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	62
270-279	-	-	-	21	25	46	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48
280-289	-	-	-	18	19	37	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38
290-299	-	-	-	8	13	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21
300-309	-	-	-	6	20	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26
310-319	-	-	-	5	6	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
320-329	-	-	-	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
330-339	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
340-349	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
350-359	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
360-369	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
370-379	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
380-389	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
390-399	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
400-409	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
410-419	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
420-429	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
430-439	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
440-449	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
450-459	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1

Appendix Table 17.--Weight frequency distributions by age and sex of samples from purse-seine catches, Middle Atlantic Area, 1953 (continued)

Weight, (g.)	Age																											Total
	1			2			3			4			5			6			7			8			9			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
460-469	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
470-479	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
480-489	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
490-499	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
500-509	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
510-519	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
520-529	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
530-539	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
540-549	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
550-559	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
560-569	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
570-579	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
580-589	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
590-599	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
600-609	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
610-619	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
620-629	-	-	-	-	-	-	-	-	-	1	-	1	1	-	1	2	-	2	-	-	-	-	-	-	-	-	-	4
630-639	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
640-649	-	-	-	-	-	-	-	-	-	1	-	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	2
650-659	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
660-669	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
670-679	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	1
680-689	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
690-699	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
700-709	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
710-719	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	-	-	-	-	-	-	-	-	2
720-729	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1
730-739	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1
740-749	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
750-759	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
760-769	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1
770-779	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	1	1	2
780-789	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
790-799	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
800-809	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
810-819	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
820-829	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
830-839	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
840-849	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
850-859	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
860-869	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
870-879	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
880-889	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1
Total . .	2	1	3	504	513	1019	3	5	8	2	2	4	2	2	4	3	3	6	-	2	2	-	-	-	-	1	1	1047

Appendix Table 18.--Weight frequency distributions by age and sex of samples from purse-seine catches, Middle Atlantic Area, 1954

Weight (g.)	Age																									Total
	1			2			3			4			5			6			7			8			9			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
110-119	1	-	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
120-129	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
130-139	-	-	-	-	-	--	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140-149	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
150-159	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
160-169	3	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
170-179	10	1	11	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
180-189	1	4	5	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
190-199	6	-	6	3	2	5	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
200-209	4	3	7	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
210-219	3	2	5	2	3	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
220-229	3	2	5	10	2	12	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19
230-239	0	1	1	14	2	16	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19
240-249	3	-	3	18	9	28	13	3	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47
250-259	-	-	-	24	17	41	19	9	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	69
260-269	-	-	-	44	21	65	16	9	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90
270-279	-	2	2	35	25	60	24	9	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	95
280-289	-	1	1	23	40	63	37	28	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	129
290-299	-	-	-	21	23	44	38	41	79	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	123
300-309	-	1	1	17	17	34	41	47	88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	123
310-319	-	-	-	14	34	48	43	31	74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122
320-329	-	-	-	13	19	32	29	33	62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	94
330-339	1	-	1	18	21	39	21	36	57	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	98
340-349	-	-	-	4	12	16	35	24	59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75
350-359	-	-	-	9	11	20	29	23	52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72
360-369	-	-	-	8	7	15	26	26	52	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	68
370-379	-	-	-	3	8	11	15	28	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	54
380-389	-	-	-	2	9	11	24	17	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52
390-399	-	-	-	4	6	11	14	27	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52
400-409	-	-	-	4	6	10	15	14	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39
410-419	-	-	-	2	7	9	4	21	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34
420-429	-	-	-	3	4	7	12	18	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37
430-439	-	-	-	1	4	5	9	14	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28
440-449	-	-	-	1	2	3	5	7	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15
450-459	-	-	-	-	1	1	4	4	8	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
460-469	-	-	-	-	1	1	3	4	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
470-479	-	-	-	-	-	-	2	8	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
480-489	-	-	-	-	1	1	5	8	13	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15
490-499	-	-	-	-	2	2	2	3	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
500-509	-	-	-	-	1	1	1	9	10	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	12
510-519	-	-	-	-	-	-	2	6	8	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
520-529	-	-	-	-	-	-	1	4	5	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	7
530-539	-	-	-	-	-	-	1	3	4	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
540-549	-	-	-	-	-	-	1	4	5	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	6
550-559	-	-	-	-	-	-	-	1	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2

Appendix Table 18.--Weight frequency distributions by age and sex of samples from purse-seine catches, Middle Atlantic Area, 1954 (continued)

Weight (g.)	Age																									Total
	1			2			3			4			5			6			7			8			9			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
560-569	-	-	-	-	-	-	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
570-579	-	-	-	-	-	-	2	2	4	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
580-589	-	-	-	-	-	-	1	-	1	-	2	2	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	5
590-599	-	-	-	-	-	-	1	-	1	-	-	-	-	1	1	-	1	1	-	-	-	-	-	-	-	-	-	3
600-609	-	-	-	-	-	-	1	-	1	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
610-619	-	-	-	-	-	-	1	2	3	1	2	3	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	7
620-629	-	-	-	-	-	-	1	2	3	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
630-639	-	-	-	-	-	-	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
640-649	-	-	-	-	-	-	1	1	2	-	4	4	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	9
650-659	-	-	-	-	-	-	-	2	2	1	-	1	-	1	1	-	1	1	-	-	-	-	-	-	-	-	-	5
660-669	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
670-679	-	-	-	-	-	-	-	1	1	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	2
680-689	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	1
690-699	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	-	-	-	-	-	-	-	-	2
700-709	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
710-719	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
720-729	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
730-739	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
740-749	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
750-759	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
760-769	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
770-779	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
780-789	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
790-799	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
800-809	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
810-819	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
820-829	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
830-839	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
840-849	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
850-859	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
860-869	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
870-879	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1
880-889	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
890-899	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
900-909	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
910-919	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
920-929	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
930-939	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
940-949	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
950-959	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
960-969	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
970-979	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1
Total . .	37	17	54	300	321	623	505	535	1040	11	15	26	7	6	13	-	4	4	1	-	1	-	-	-	-	1	1	1762

Appendix Table 19.--Weight frequency distributions by age and sex of samples from purse-seine catches, North Atlantic Area, 1954

Weight, (g.)	Age																						Total
	2			3			4			5			6			7			8			9			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
260-269	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
270-279	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
280-289	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
290-299	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
300-309	-	-	-	9	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
310-319	-	-	-	7	1	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
320-329	1	-	1	25	3	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29
330-339	1	-	1	31	9	40	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42
340-349	2	-	2	40	13	53	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	56
350-359	1	-	1	61	26	87	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	88
360-369	1	2	3	46	38	84	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	88
370-379	2	1	3	85	37	122	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	126
380-389	-	2	2	84	69	153	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	158
390-399	1	1	2	80	60	140	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	143
400-409	1	-	1	70	73	143	4	1	5	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	150
410-419	1	-	1	45	73	118	3	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122
420-429	-	1	1	34	61	95	3	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	99
430-439	-	-	-	28	72	100	-	2	2	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	103
440-449	-	-	-	19	57	76	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	79
450-459	-	-	-	22	40	62	6	3	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71
460-469	-	-	-	10	46	56	4	2	6	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	64
470-479	-	-	-	10	32	42	3	3	7	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	52
480-489	-	-	-	6	29	35	3	4	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42
490-499	-	-	-	4	19	23	4	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31
500-509	-	2	2	3	15	18	3	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24
510-519	-	-	-	1	8	9	2	5	7	-	1	1	1	-	1	1	-	1	-	-	-	-	-	-	19
520-529	-	-	-	3	16	19	7	5	12	1	-	1	-	1	1	-	-	-	-	-	-	-	-	-	33
530-539	-	-	-	1	7	8	2	7	9	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	18
540-549	-	-	-	1	6	7	2	2	4	-	-	-	2	-	2	-	-	-	-	-	-	-	-	-	13
550-559	-	-	-	-	4	4	3	2	5	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	10

Appendix Table 19.--Weight frequency distributions by age and sex of samples from purse-seine catches, North Atlantic Area, 1954 (continued)

Weight, (g.)	Age																								Total
	2			3			4			5			6			7			8			9			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
560-569	-	-	-	-	2	2	-	3	3	2	3	5	-	-	-	1	-	1	-	-	-	-	-	-	11
570-579	-	-	-	2	1	3	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
580-589	-	-	-	2	-	2	3	3	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
590-599	-	-	-	-	-	-	4	2	6	-	3	3	-	-	-	-	-	-	-	-	-	-	-	-	9
600-609	-	-	-	-	1	1	-	3	3	2	-	2	1	1	2	-	-	-	1	-	1	-	-	-	9
610-619	-	-	-	-	2	2	1	1	2	2	4	6	1	-	1	-	-	-	-	-	-	-	-	-	11
620-629	-	-	-	-	-	-	-	3	3	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	4
630-639	-	-	-	-	3	3	2	3	5	2	-	2	-	1	1	-	-	-	-	-	-	-	-	-	11
640-649	-	-	-	-	1	1	-	3	3	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	6
650-659	-	-	-	-	-	-	-	-	-	-	3	3	-	-	-	-	-	-	-	-	-	-	-	-	3
660-669	-	-	-	-	-	-	-	2	2	1	2	3	-	1	1	1	1	2	-	-	-	-	-	-	8
670-679	-	-	-	-	-	-	-	1	1	1	1	2	-	1	1	-	-	-	-	-	-	-	-	-	4
680-689	-	-	-	-	-	-	-	2	2	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	3
690-699	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
700-709	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
710-719	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1
720-729	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
730-739	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1
740-749	-	-	-	-	-	-	-	1	1	-	1	1	-	-	-	-	1	1	-	-	-	-	-	-	3
750-759	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	-	-	-	-	-	-	-	-	2
760-769	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
770-779	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
780-789	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
790-799	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
800-809	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
810-819	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	1	1	-	-	-	-	-	-	2
820-829	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
830-839	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1
840-849	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
850-859	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
860-869	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
870-879	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1
Total . .	11	9	20	730	824	1554	68	75	143	18	25	43	7	9	16	3	3	6	1	-	1	-	1	1	1784

Appendix Table 20.--Weight frequency distributions by age and sex of samples from purse-seine catches, South Atlantic Area, 1955

Weight, (g.)	Age															Total
	0			1			2			3			4			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
10- 19	-	-	-	-	2	2	-	-	-	-	-	-	-	-	-	2
20- 29	11	5	16	3	6	18	-	-	-	-	-	-	-	-	-	34
30- 39	5	3	8	34	53	101	1	-	1	-	-	-	-	-	-	110
40- 49	2	3	5	57	78	150	-	2	2	-	-	-	-	-	-	157
50- 59	2	-	2	82	105	187	-	1	1	-	-	-	-	-	-	190
60- 69	-	-	-	88	122	218	-	-	-	-	-	-	-	-	-	218
70- 79	-	-	-	143	114	262	7	5	12	-	-	-	-	-	-	274
80- 89	-	-	-	158	154	322	15	23	38	-	-	-	-	-	-	360
90- 99	-	-	-	108	130	245	30	53	85	-	-	-	-	-	-	330
100-109	-	-	-	53	69	124	55	53	109	-	4	4	-	2	2	239
110-119	-	-	-	37	49	87	51	65	117	3	3	6	2	-	2	212
120-129	-	-	-	23	35	58	52	64	117	1	1	2	1	-	1	178
130-139	-	-	-	16	20	36	43	57	100	4	3	7	4	1	5	148
140-149	-	-	-	8	11	19	29	36	65	10	7	17	3	8	11	112
150-159	-	-	-	3	3	6	20	28	48	6	6	12	7	16	23	89
160-169	-	-	-	2	6	8	10	21	31	9	12	21	10	5	15	75
170-179	-	-	-	-	4	4	8	12	20	3	5	8	5	8	13	45
180-189	-	-	-	-	3	3	2	5	7	2	4	6	1	3	4	20
190-199	-	-	-	-	1	1	1	5	6	2	3	5	1	2	3	15
200-209	-	-	-	-	-	-	-	4	4	-	1	1	-	-	-	5
210-219	-	-	-	1	1	2	-	1	1	-	1	1	-	-	-	4
220-229	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	1
230-239	-	-	-	-	-	-	1	2	3	-	-	-	-	-	-	3
240-249	-	-	-	-	-	-	-	3	3	-	-	-	-	-	-	3
250-259	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1
260-269	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
270-279	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
280-289	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1
Total . .	20	11	31	816	967	1854	326	441	772	40	50	90	34	45	79	2826

Appendix Table 21.--Weight frequency distributions by age and sex of samples from spring pound-net catches, Chesapeake Bay Area, 1955

Weight (g.)	Age																					Total
	1			2			3			4			5			6			7			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
30- 39	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
40- 49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50- 59	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
60- 69	8	6	14	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15
70- 79	4	13	17	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20
80- 89	14	22	36	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37
90- 99	3	3	6	2	3	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
100-109	2	5	7	2	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
110-119	2	2	4	1	4	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
120-129	1	1	2	1	4	5	-	1	1	1	-	1	-	-	-	-	-	-	-	-	-	9
130-139	-	-	-	2	8	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
140-149	-	2	2	8	8	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18
150-159	-	-	-	11	15	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26
160-169	-	1	1	17	17	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35
170-179	-	-	-	16	19	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35
180-189	-	-	-	8	14	22	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	24
190-199	-	-	-	15	12	27	-	1	1	1	-	1	-	-	-	-	-	-	-	-	-	29
200-209	-	-	-	12	9	21	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	22
210-219	-	-	-	3	10	13	-	1	1	1	-	1	-	-	-	-	-	-	-	-	-	15
220-229	-	-	-	5	5	10	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	11
230-239	-	-	-	2	3	5	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	6
240-249	-	-	-	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
250-259	-	-	-	2	-	2	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	3
260-269	-	-	-	-	1	1	-	1	1	-	1	1	-	-	-	-	-	-	-	-	-	3
270-279	-	-	-	-	1	1	-	-	-	1	3	4	-	-	-	-	-	-	-	-	-	5
280-289	-	-	-	1	-	1	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	2
290-299	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
300-309	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
310-319	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
320-329	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	1
330-339	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
340-349	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
350-359	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
360-369	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1
660-669	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1
Total . .	35	56	91	113	138	251	2	5	7	5	7	12	-	3	3	-	-	-	-	1	1	365

Appendix Table 22.--Weight frequency distributions by age and sex of samples from purse-seine catches, Chesapeake Bay Area, 1955

Weight, (g.)	Age																		Total
	0			1			2			3			4			5			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
30- 39	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
40- 49	4	1	6	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	8
50- 59	11	5	19	3	1	5	-	-	-	-	-	-	-	-	-	-	-	-	24
60- 69	2	2	4	1	6	8	-	-	-	-	-	-	-	-	-	-	-	-	12
70- 79	6	2	8	4	5	10	-	-	-	-	-	-	-	-	-	-	-	-	18
80- 89	1	-	1	13	16	35	-	1	1	-	-	-	-	-	-	-	-	-	37
90- 99	-	-	-	19	22	41	1	2	3	-	-	-	-	-	-	-	-	-	44
100-109	1	-	1	33	50	84	1	-	1	-	-	-	-	-	-	-	-	-	86
110-119	-	-	-	47	63	111	-	3	3	-	-	-	-	-	-	-	-	-	114
120-129	-	-	-	77	57	134	7	5	13	-	-	-	-	-	-	-	-	-	147
130-139	-	-	-	84	81	165	4	8	12	1	-	1	-	-	-	-	-	-	178
140-149	-	-	-	76	52	128	7	8	15	-	-	-	-	-	-	-	-	-	143
150-159	-	-	-	63	79	142	12	7	19	-	1	1	-	-	-	-	-	-	162
160-169	-	-	-	54	60	114	16	11	27	-	-	-	-	-	-	-	-	-	141
170-179	-	-	-	35	51	86	12	23	35	1	-	1	-	-	-	-	-	-	122
180-189	-	-	-	30	33	63	45	40	85	-	-	-	-	-	-	-	-	-	148
190-199	-	-	-	11	23	34	66	51	117	-	3	3	1	-	1	-	-	-	155
200-209	-	-	-	6	20	26	85	75	160	-	1	1	-	-	-	-	-	-	187
210-219	-	-	-	1	4	5	108	84	193	1	2	3	-	-	-	1	-	1	202
220-229	-	-	-	2	3	5	86	107	194	-	-	-	1	-	1	-	-	-	200
230-239	-	-	-	1	-	1	71	101	172	1	2	3	-	-	-	-	-	-	176
240-249	-	-	-	-	1	1	52	65	118	1	3	4	2	-	2	-	-	-	125
250-259	-	-	-	-	-	-	35	48	83	2	2	4	1	-	1	-	1	1	89
260-269	-	-	-	-	-	-	15	29	44	1	1	2	-	-	-	-	-	-	46
270-279	-	-	-	3	-	3	10	18	28	1	3	4	4	1	5	-	-	-	40
280-289	-	-	-	1	-	1	7	15	22	-	-	-	-	2	2	-	-	-	25
290-299	-	-	-	1	-	1	2	9	11	-	-	-	-	1	1	-	-	-	13

Appendix Table 22.--Weight frequency distributions by age and sex of samples from purse-seine catches, Chesapeake Bay Area, 1955 (continued)

Weight, (g.)	Age																		Total
	0			1			2			3			4			5			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
300-309	-	-	-	-	-	-	5	13	18	3	2	5	1	-	1	-	-	-	24
310-319	-	-	-	-	-	-	-	3	3	-	-	-	-	1	1	-	-	-	4
320-329	-	-	-	-	-	-	1	3	4	-	1	1	1	-	1	-	-	-	6
330-339	-	-	-	-	-	-	-	1	1	-	1	1	-	1	1	-	-	-	3
340-349	-	-	-	-	-	-	1	1	2	-	-	-	-	1	1	-	-	-	3
350-359	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-	-	2
360-369	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	1
370-379	-	-	-	-	-	-	1	-	1	-	1	1	-	-	-	-	-	-	2
380-389	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	1
390-399	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	1
400-409	-	-	-	-	-	-	1	1	2	-	1	1	-	-	-	-	-	-	3
410-419	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
420-429	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	1
430-439	-	-	-	-	-	-	1	2	3	-	-	-	-	-	-	-	-	-	3
440-449	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-	-	2
450-459	-	-	-	-	1	1	1	-	1	-	-	-	-	-	-	-	-	-	2
460-469	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
470-479	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1
480-489	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
490-499	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
500-509	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
510-519	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
520-529	-	-	-	-	-	-	-	1	1	-	1	1	-	-	-	-	-	-	2
Total . .	25	10	40	566	629	1206	657	740	1401	12	25	37	11	7	18	1	1	2	2704

Appendix Table 23.--Weight frequency distributions by age and sex of samples from purse-seine catches, Middle Atlantic Area, 1955

Weight, (g.)	Age																						Total
	1			2			3			4			5			6			7			8			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
100-109	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
110-119	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
120-129	1	-	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
130-139	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
140-149	2	-	2	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
150-159	-	-	-	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
160-169	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
170-179	-	-	-	1	2	3	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
180-189	4	5	9	2	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13
190-199	5	-	5	6	5	11	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17
200-209	5	1	6	8	4	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18
210-219	1	1	2	24	13	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39
220-229	-	4	4	31	17	48	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	54
230-239	3	1	4	40	24	64	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71
240-249	2	2	4	46	42	88	1	-	1	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	95
250-259	1	2	3	73	49	122	4	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	129
260-269	1	2	3	82	51	135	7	1	8	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	147
270-279	1	2	3	77	67	145	13	5	18	4	1	5	-	-	-	-	-	-	-	-	-	-	-	-	171
280-289	1	1	2	76	62	139	13	5	18	3	2	5	-	-	-	-	-	-	-	-	-	-	-	-	164
290-299	-	-	-	78	59	138	14	9	23	5	2	7	-	-	-	-	-	-	-	-	-	-	-	-	168
300-309	-	-	-	62	82	145	19	7	26	8	2	10	-	-	-	-	-	-	-	-	-	-	-	-	181
310-319	-	-	-	56	50	106	21	13	35	11	6	17	-	1	1	-	-	-	-	-	-	-	-	-	159
320-329	1	1	2	51	46	97	32	13	45	9	4	13	2	-	2	-	-	-	-	-	-	-	-	-	159
330-339	-	1	1	32	37	69	44	19	64	22	7	29	2	-	2	-	-	-	-	-	-	-	-	-	165
340-349	-	-	-	38	37	75	49	19	68	24	10	34	2	-	2	1	-	1	-	-	-	-	-	-	180
350-359	-	-	-	29	42	71	46	27	73	29	16	45	-	1	1	-	-	-	-	-	-	-	-	-	190
360-369	-	-	-	40	36	77	45	37	82	32	16	48	2	1	3	-	-	-	-	-	-	-	-	-	210
370-379	-	1	1	41	39	80	57	51	108	42	16	58	3	2	5	-	-	-	-	-	-	-	-	-	252
380-389	-	-	-	28	20	48	48	46	94	35	29	64	3	4	7	-	-	-	-	-	-	-	-	-	213
390-399	-	1	1	26	21	47	45	49	94	41	36	77	3	2	5	-	-	-	-	-	-	-	-	-	224
400-409	-	-	-	20	25	45	39	50	89	35	42	77	3	2	5	-	-	-	-	-	-	-	-	-	216
410-419	-	-	-	11	24	35	39	58	97	30	54	84	2	2	4	-	1	1	-	-	-	-	-	-	221
420-429	-	-	-	20	19	39	23	42	65	22	35	57	1	1	2	-	-	-	-	-	-	-	-	-	163
430-439	-	-	-	17	15	32	31	38	69	21	37	59	3	4	7	-	-	-	-	-	-	-	-	-	167
440-449	-	-	-	13	15	28	19	33	52	16	24	40	3	3	6	-	-	-	-	-	-	-	-	-	126
450-459	-	-	-	6	10	16	16	32	48	18	31	49	1	2	3	-	-	-	-	-	-	-	-	-	116
460-469	-	-	-	5	5	10	10	28	38	27	27	54	-	2	2	1	1	2	-	-	-	-	-	-	106
470-479	-	-	-	4	5	9	6	24	30	18	32	50	3	-	3	-	-	-	-	-	-	-	-	-	92
480-489	-	-	-	5	6	11	11	25	36	10	22	32	2	1	3	-	1	1	-	-	-	-	-	-	83
490-499	-	-	-	2	5	7	12	18	30	13	15	28	-	2	2	1	1	2	-	-	-	-	-	-	69
500-509	-	-	-	3	7	10	9	14	23	11	21	32	-	-	-	-	1	1	-	-	-	-	-	-	66
510-519	-	-	-	2	2	4	4	15	19	16	27	43	3	3	6	-	-	-	-	-	-	-	-	-	72

Appendix Table 23.--Weight frequency distributions by age and sex of samples from purse-seine catches, Middle Atlantic Area, 1955 (continued)

Weight, (g.)	Age																							Total
	1			2			3			4			5			6			7			8			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
520-529	-	-	-	-	1	1	3	9	12	11	18	29	4	5	9	-	-	-	-	-	-	-	-	-	51
530-539	-	-	-	-	2	2	2	4	6	7	16	23	-	2	2	-	-	-	-	-	-	-	-	-	33
540-549	-	-	-	2	1	3	4	9	13	12	16	28	2	3	5	-	-	-	-	-	-	1	-	1	50
550-559	-	-	-	-	-	-	3	9	12	12	19	31	5	-	5	1	1	2	-	-	-	-	-	-	50
560-569	-	-	-	-	-	-	3	8	11	5	13	18	1	1	2	-	-	-	-	-	-	-	-	-	31
570-579	-	-	-	-	-	-	1	10	11	6	12	18	2	1	3	-	-	-	-	-	-	-	-	-	32
580-589	-	-	-	2	2	4	1	4	5	6	15	21	1	1	2	-	1	1	-	-	-	-	-	-	33
590-599	-	-	-	-	3	3	1	3	4	6	14	20	1	2	3	-	-	-	-	-	-	-	-	-	30
600-609	-	-	-	-	1	1	1	2	3	7	18	25	1	3	4	-	-	-	1	-	1	-	-	-	34
610-619	-	-	-	1	-	1	1	2	3	2	12	14	-	1	1	-	1	1	-	-	-	-	-	-	20
620-629	-	-	-	-	-	-	2	2	4	8	9	17	-	-	-	-	1	1	-	-	-	-	-	-	22
630-639	-	-	-	-	-	-	1	4	5	-	10	10	-	4	4	-	-	-	-	1	1	-	-	-	20
640-649	-	-	-	-	-	-	1	3	4	1	13	14	2	2	4	-	1	1	-	1	1	-	-	-	24
650-659	-	-	-	-	-	-	-	1	1	-	6	6	1	2	3	-	-	-	-	-	-	-	-	-	10
660-669	-	-	-	-	-	-	-	-	-	-	4	4	1	-	1	-	-	-	1	-	1	-	-	-	6
670-679	-	-	-	-	-	-	-	-	-	-	4	4	2	2	4	-	1	1	-	-	-	-	-	-	9
680-689	-	-	-	-	-	-	-	2	2	1	7	8	-	-	-	-	-	-	-	1	1	-	-	-	11
690-699	-	-	-	-	-	-	-	1	1	-	9	9	-	1	1	-	-	-	-	-	-	-	-	-	11
700-709	-	-	-	-	-	-	-	-	-	-	4	4	-	2	2	-	1	1	-	-	-	-	-	-	7
710-719	-	-	-	-	-	-	-	1	1	-	8	8	-	1	1	-	1	1	-	1	1	-	-	-	12
720-729	-	-	-	-	-	-	-	-	-	-	2	2	-	1	1	-	-	-	-	-	-	-	-	-	3
730-739	-	-	-	-	-	-	-	-	-	-	3	3	-	1	1	-	2	2	-	-	-	-	-	-	6
740-749	-	-	-	-	-	-	-	-	-	1	-	1	-	1	1	-	-	-	-	-	-	-	-	-	2
750-759	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1
760-769	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	-	-	-	-	-	-	-	-	2
770-779	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
780-789	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
790-799	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1
800-809	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	1
810-819	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	1
820-829	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	1
830-839	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
840-849	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
850-859	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
860-869	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
870-879	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
880-889	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
890-899	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
900-909	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
910-919	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
920-929	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1
Total . .	31	25	56	1062	957	2026	703	757	1462	588	750	1339	61	70	131	4	17	21	2	7	9	1	-	1	5045

Appendix Table 24.--Weight frequency distributions by age and sex of samples from purse-seine catches, North Atlantic Area, 1955

Weight (g.)	Age																									Total
	2			3			4			5			6			7			8			9			10			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
200-209	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
210-219	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
220-229	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
230-239	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
240-249	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
250-259	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
260-269	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
270-279	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
280-289	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
290-299	-	-	-	1	2	3	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
300-309	1	-	1	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
310-319	1	-	1	1	2	3	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
320-329	-	-	-	6	-	6	3	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
330-339	1	1	2	5	3	9	3	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
340-349	1	-	1	12	5	17	6	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24
350-359	-	-	-	7	3	10	10	3	13	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24
360-369	-	-	-	7	7	14	12	4	16	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31
370-379	-	-	-	14	6	20	24	8	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52
380-389	1	-	1	16	19	35	29	8	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	73
390-399	-	-	-	14	10	24	33	7	40	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65
400-409	-	-	-	10	11	21	31	5	36	2	2	4	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	62
410-419	-	-	-	9	16	25	39	32	71	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	97
420-429	-	-	-	10	20	30	39	18	57	2	1	3	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	91
430-439	1	-	1	8	14	22	59	28	87	3	2	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	115
440-449	-	-	-	13	6	19	40	34	74	4	1	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	98
450-459	-	-	-	3	8	12	50	32	82	4	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	98
460-469	1	-	1	4	7	11	36	32	68	4	1	5	3	1	4	-	-	-	-	-	-	-	-	-	-	-	-	89
470-479	-	-	-	7	9	16	47	36	83	6	3	9	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	109
480-489	-	-	-	2	7	10	29	43	72	7	4	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	93
490-499	-	-	-	4	4	8	41	47	88	7	6	13	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	110
500-509	-	1	1	5	6	11	35	47	82	11	4	15	3	2	5	-	-	-	-	-	-	-	-	-	-	-	-	114
510-519	-	-	-	3	4	7	27	49	77	9	2	11	1	1	2	1	-	1	-	-	-	-	-	-	-	-	-	98
520-529	-	-	-	3	6	9	31	54	85	9	7	16	2	1	3	1	-	1	-	-	-	-	-	-	-	-	-	114
530-539	-	-	-	2	3	5	28	54	82	6	7	13	5	-	5	1	-	1	-	-	-	-	-	-	-	-	-	106
540-549	-	-	-	5	2	7	17	55	72	9	6	15	3	2	5	1	-	1	-	-	-	-	-	-	-	-	-	100
550-559	-	-	-	-	-	-	15	36	51	7	12	19	6	-	6	2	-	2	-	-	-	-	-	-	-	-	-	78

Appendix Table 24.--Weight frequency distributions by age and sex of samples from purse-seine catches, North Atlantic Area, 1955 (continued)

Weight (g.)	Age																									Total
	2			3			4			5			6			7			8			9			10			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
560-569	-	-	-	1	2	3	15	35	51	14	9	23	2	2	4	2	-	2	-	-	-	-	-	-	-	-	-	83
570-579	-	-	-	-	1	1	15	22	38	10	9	19	4	3	7	-	-	-	-	-	-	-	-	-	-	-	-	65
580-589	1	-	1	1	-	1	14	40	54	11	8	20	3	5	8	-	2	2	-	-	-	-	-	-	-	-	-	86
590-599	-	-	-	1	1	2	10	20	30	6	14	20	1	5	6	1	1	2	-	-	-	-	-	-	-	-	-	60
600-609	-	-	-	-	2	2	4	17	21	8	13	21	2	4	6	1	-	1	1	-	1	-	-	-	-	-	-	52
610-619	-	-	-	-	1	1	5	24	29	6	22	28	1	6	7	2	1	3	-	-	-	-	-	-	-	-	-	68
620-629	-	-	-	-	-	-	3	21	24	8	15	23	2	2	4	1	-	1	-	-	-	1	-	1	-	-	-	53
630-639	-	-	-	-	-	-	1	11	12	4	12	16	6	4	10	-	-	-	-	-	-	-	-	-	-	-	-	38
640-649	-	-	-	-	-	-	3	9	12	3	9	12	2	3	5	2	-	2	-	-	-	-	-	-	-	-	-	31
650-659	-	-	-	-	3	3	1	4	5	8	9	17	5	7	12	1	1	2	1	-	1	-	-	-	-	-	-	40
660-669	-	-	-	-	-	-	-	5	5	3	13	16	3	3	6	1	1	2	1	1	2	-	-	-	-	-	-	31
670-679	-	-	-	-	-	-	-	5	5	1	13	14	-	8	8	-	2	2	-	-	-	-	-	-	-	-	-	29
680-689	-	-	-	-	-	-	-	2	2	-	6	6	2	7	9	-	2	2	-	-	-	-	-	-	-	-	-	19
690-699	-	-	-	-	-	-	-	2	2	-	2	2	5	-	5	3	1	4	-	-	-	-	-	-	-	-	-	13
700-709	-	-	-	-	-	-	1	1	2	1	7	8	1	5	6	-	2	2	-	-	-	-	-	-	-	-	-	18
710-719	-	-	-	-	-	-	-	2	2	1	8	9	-	6	6	1	2	3	-	2	2	-	-	-	-	-	-	22
720-729	-	-	-	-	-	-	-	1	1	1	5	6	-	3	3	1	2	3	-	-	-	-	-	-	-	-	-	13
730-739	-	-	-	-	-	-	-	1	1	1	4	5	-	8	8	-	1	1	-	1	1	-	1	1	-	-	-	17
740-749	-	-	-	-	-	-	-	3	3	1	4	5	2	1	3	-	1	1	-	-	-	-	-	-	1	-	1	13
750-759	-	-	-	-	-	-	-	-	-	-	2	2	1	-	1	-	1	1	-	-	-	-	-	-	-	-	-	4
760-769	-	-	-	-	-	-	-	1	1	-	1	1	-	2	2	-	1	1	-	1	1	-	-	-	-	-	-	6
770-779	-	-	-	-	-	-	-	-	-	-	-	-	1	2	3	-	3	3	-	-	-	-	-	-	-	-	-	6
780-789	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	-	-	-	1	1	-	-	-	-	-	-	3
790-799	-	-	-	-	-	-	-	-	-	-	2	2	1	1	2	-	1	1	-	1	1	-	-	-	-	-	-	6
800-809	-	-	-	-	-	-	-	1	1	-	3	3	-	3	3	-	2	2	-	-	-	-	-	-	-	1	1	10
810-819	-	-	-	-	-	-	-	-	-	-	1	1	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	3
820-829	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	2	2	-	-	-	-	-	-	-	-	-	4
830-839	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	1	1	2	1	-	1	-	-	-	4
840-849	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	1
850-859	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
860-869	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1
870-879	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1
880-889	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1
890-899	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
900-909	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
910-919	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	1
Total . .	8	2	10	176	192	372	759	861	1624	179	235	433	70	105	175	19	31	50	4	8	12	2	2	4	1	1	2	2684

Appendix Table 25.--Weight frequency distributions by age and sex of samples from purse-seine catches, North Carolina fall fishery, 1955

Weight, (g.)	Age																									Total
	0			1			2			3			4			5			6			7			8			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
0- 9	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
10- 19	34	25	64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	64
20- 29	81	88	190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	190
30- 39	42	29	79	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	79
40- 49	15	20	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36
50- 59	15	14	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30
60- 69	5	7	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
70- 79	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
80- 89	-	1	1	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
90- 99	3	1	4	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
100-109	1	1	2	2	1	3	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
110-119	-	-	-	8	1	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
120-129	-	-	-	12	4	16	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17
130-139	-	-	-	16	5	21	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22
140-149	-	-	-	23	12	35	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	36
150-159	-	-	-	26	24	50	4	1	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55
160-169	-	-	-	23	14	37	3	1	4	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42
170-179	-	-	-	21	10	31	11	5	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47
180-189	-	-	-	12	20	32	15	5	20	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	53
190-199	-	-	-	4	8	12	9	10	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31
200-209	-	-	-	1	7	8	6	6	12	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21
210-219	-	-	-	1	2	3	5	6	11	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15
220-229	-	-	-	-	1	1	3	6	9	1	1	2	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	13
230-239	-	-	-	1	-	1	-	1	1	1	1	2	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	5
240-249	-	-	-	-	1	1	3	4	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
250-259	-	-	-	-	-	-	3	1	4	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
260-269	-	-	-	-	-	-	3	4	7	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
270-279	-	-	-	-	-	-	2	2	4	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
280-289	-	-	-	-	1	1	1	4	5	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
290-299	-	-	-	1	-	1	4	1	5	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
300-309	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
310-319	-	-	-	-	-	-	1	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
320-329	-	-	-	-	1	1	5	1	6	-	1	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	9
330-339	-	-	-	-	-	-	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
340-349	-	-	-	1	-	1	7	2	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
350-359	-	-	-	-	1	1	9	2	11	1	-	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	14
360-369	-	-	-	1	-	1	10	3	13	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15
370-379	-	-	-	-	-	-	6	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
380-389	-	-	-	-	1	1	11	5	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17
390-399	-	-	-	-	-	-	13	10	23	3	1	4	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	28

Appendix Table 25.--Weight frequency distributions by age and sex of samples from purse-seine catches, North Carolina fall fishery, 1955 (continued)

Weight (g.)	Age																									Total
	0			1			2			3			4			5			6			7			8			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
400-409	-	-	-	-	-	-	13	8	21	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	22
410-419	-	-	-	-	-	-	10	11	21	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	22
420-429	-	-	-	-	-	-	11	7	18	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19
430-439	-	-	-	-	-	-	13	10	23	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25
440-449	-	-	-	-	-	-	3	14	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17
450-459	-	-	-	-	-	-	9	8	17	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	18
460-469	-	-	-	-	-	-	3	7	10	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	11
470-479	-	-	-	-	-	-	2	8	10	2	-	2	1	1	2	-	1	1	-	-	-	-	-	-	-	-	-	15
480-489	-	-	-	-	-	-	2	6	8	2	-	2	3	-	3	-	-	-	-	-	-	-	-	-	-	-	-	13
490-499	-	-	-	-	-	-	2	3	5	2	3	5	5	-	5	-	-	-	-	-	-	-	-	-	-	-	-	15
500-509	-	-	-	-	-	-	5	2	7	-	-	-	3	2	5	-	-	-	-	-	-	-	-	-	-	-	-	12
510-519	-	-	-	-	-	-	1	3	4	-	1	1	6	1	7	1	-	1	-	-	-	-	-	-	-	-	-	13
520-529	-	-	-	-	-	-	-	2	2	2	1	3	5	2	7	-	-	-	-	-	-	-	-	-	-	-	-	12
530-539	-	-	-	-	-	-	1	5	6	1	2	3	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	11
540-549	-	-	-	-	-	-	1	1	2	-	1	1	6	1	7	-	-	-	-	-	-	-	-	-	-	-	-	10
550-559	-	-	-	-	-	-	-	1	1	2	1	3	6	3	9	-	-	-	-	-	-	-	-	-	-	-	-	13
560-569	-	-	-	-	-	-	-	-	-	-	-	-	3	4	7	1	-	1	-	-	-	-	-	-	-	-	-	8
570-579	-	-	-	-	-	-	-	2	2	1	2	3	4	6	10	-	-	-	-	-	-	-	-	-	-	-	-	15
580-589	-	-	-	-	-	-	-	1	1	-	-	-	8	6	14	1	1	2	-	-	-	-	-	-	-	-	-	17
590-599	-	-	-	-	-	-	-	-	-	1	3	4	3	4	7	2	-	2	-	-	-	-	-	-	-	-	-	13
600-609	-	-	-	-	-	-	-	-	-	-	2	2	2	8	10	1	-	1	-	-	-	-	-	-	-	-	-	13
610-619	-	-	-	-	-	-	-	-	-	1	2	3	1	7	8	-	-	-	-	-	-	-	-	-	-	-	-	11
620-629	-	-	-	-	-	-	-	-	-	-	2	2	1	6	7	-	2	2	-	-	-	-	-	-	-	-	-	11
630-639	-	-	-	-	-	-	-	-	-	-	1	1	2	5	7	1	-	1	1	-	1	-	-	-	-	-	-	10
640-649	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	2
650-659	-	-	-	-	-	-	-	-	-	-	-	-	1	4	5	1	1	2	-	-	-	-	-	-	-	-	-	7
660-669	-	-	-	-	-	-	-	-	-	-	1	1	-	3	3	-	-	-	-	-	-	-	-	-	-	-	-	4
670-679	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	-	1	1	-	-	-	-	-	-	-	-	-	3
680-689	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	1	-	1	-	-	-	-	-	-	3
690-699	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	1	-	1	1	-	1	-	-	-	-	-	-	3
700-709	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1
710-719	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
720-729	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1
730-739	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	-	-	-	-	-	-	-	-	2
740-749	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	-	-	-	-	-	-	-	-	-	3
750-759	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	1	1	-	-	-	-	-	-	2
760-769	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
770-779	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
780-789	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1
790-799	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	1
Total . .	197	188	422	155	115	270	214	190	404	30	32	62	70	72	142	11	12	23	3	1	4	-	-	-	1	-	1	1328

Appendix Table 26.--Weight frequency distributions by age and sex of samples from spring pound-net catches, Middle Atlantic Area, 1955

Weight, (g.)	Age																								Total
	2			3			4			5			6			7			8			9			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
260-269	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
270-279	1	-	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
280-289	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
290-299	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
300-309	-	-	-	2	-	2	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
310-319	-	-	-	1	1	2	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
320-329	-	-	-	1	-	1	3	2	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
330-339	-	-	-	1	-	1	2	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
340-349	-	-	-	2	-	2	5	2	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
350-359	-	-	-	3	3	6	9	2	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17
360-369	-	-	-	1	1	2	5	6	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13
370-379	-	-	-	1	1	2	13	1	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
380-389	-	-	-	2	4	6	6	9	15	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	24
390-399	-	-	-	1	1	2	14	6	20	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	23
400-409	-	-	-	-	1	1	18	10	28	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	30
410-419	-	-	-	-	2	2	16	15	31	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	34
420-429	-	-	-	1	-	1	16	17	33	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	35
430-439	-	-	-	-	1	1	12	15	27	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	29
440-449	-	-	-	-	-	-	5	12	17	3	-	3	-	-	-	-	-	-	-	-	-	-	-	-	20
450-459	-	-	-	-	-	-	4	18	22	2	-	2	1	-	1	-	-	-	-	-	-	-	-	-	25
460-469	-	-	-	-	-	-	2	16	18	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	19
470-479	-	-	-	-	1	1	-	11	11	1	1	2	1	1	2	-	-	-	-	-	-	-	-	-	16
480-489	-	-	-	-	-	-	3	8	11	5	4	9	-	-	-	-	-	-	-	-	-	-	-	-	20
490-499	-	-	-	-	-	-	1	9	10	1	-	1	1	-	1	-	-	-	-	-	-	-	-	-	12
500-509	-	-	-	-	-	-	-	6	6	3	4	7	-	-	-	-	-	-	-	-	-	-	-	-	13
510-519	-	-	-	-	-	-	1	-	1	2	2	4	-	2	2	-	-	-	-	-	-	-	-	-	7
520-529	-	-	-	-	-	-	-	4	4	-	1	1	-	1	1	-	-	-	-	-	-	-	-	-	6
530-539	-	-	-	-	-	-	-	-	-	1	2	3	1	-	1	-	-	-	-	-	-	-	-	-	4
540-549	-	-	-	-	-	-	-	2	2	1	5	6	1	-	1	-	-	-	-	-	-	-	-	-	9
550-559	-	-	-	-	-	-	-	1	1	1	1	2	-	1	1	1	-	1	-	-	-	-	-	-	5
560-569	-	-	-	-	1	1	-	-	-	-	4	4	1	4	5	-	-	-	-	-	-	-	-	-	10
570-579	-	-	-	-	-	-	-	1	1	-	-	-	-	2	2	-	-	-	-	-	-	-	-	-	3
580-589	-	-	-	-	-	-	-	-	-	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	2
590-599	-	-	-	-	-	-	-	-	-	-	2	2	1	-	1	-	-	-	-	-	-	-	-	-	3
600-609	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
610-619	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	-	-	-	-	-	2
620-629	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1
630-639	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
640-649	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-	-	2
650-659	-	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	1	1	-	-	-	-	-	-	3
660-669	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1
670-679	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	1	1	-	-	-	2
680-689	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
690-699	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
700-709	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
710-719	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
720-729	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
730-739	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
740-749	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
750-759	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	1
760-769	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
770-779	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1
Total . .	1	1	2	17	17	34	138	175	313	27	31	58	8	16	24	2	3	5	-	1	1	-	1	1	438

Appendix Table 27.--Mean fork length and weight of fish by age and sex in samples from purse-seine catches, Middle Atlantic Area, 1952

(Numbers of fish in parentheses)

FORK LENGTH (mm.)

Age	Males		Females		Both sexes	
1 ...	208.4	(437)	210.0	(381)	209.1	(818)
2 ...	234.5	(33)	232.4	(42)	233.3	(75)
3 ...	272.6	(9)	276.8	(6)	274.3	(15)
4 ...	307.5	(2)	318.0	(1)	311.0	(3)
5 ...	319.0	(3)	326.0	(2)	321.8	(5)
6 ...	332.0	(1)	331.5	(2)	331.7	(3)
7 ...	317.0	(1)	335.5	(2)	329.3	(3)

WEIGHT (g.)

1 ...	169.1	(367)	170.5	(312)	169.7	(679)
2 ...	236.9	(31)	231.2	(37)	233.8	(68)
3 ...	372.9	(9)	410.3	(6)	387.9	(15)
4 ...	548.5	(2)	608.0	(1)	568.3	(3)
5 ...	535.7	(3)	-	-	535.7	(3)
6 ...	553.0	(1)	-	-	553.0	(1)
7 ...	558.0	(1)	-	-	558.0	(1)

Appendix Table 28.--Mean fork length and weight of fish by age and sex in samples from purse-seine catches, Middle Atlantic Area, 1953
(Numbers of fish in parentheses)

FORK LENGTH (mm.)

Age	Males		Females		Both sexes	
1 ...	212.5	(2)	236.5	(2)	224.5	(4)
2 ...	233.4	(743)	235.8	(764)	234.6	(1507)
3 ...	244.0	(3)	273.8	(6)	263.8	(9)
4 ...	316.5	(2)	325.5	(2)	321.0	(4)
5 ...	311.5	(2)	339.0	(2)	325.2	(4)
6 ...	325.0	(3)	336.0	(3)	330.5	(6)
7 ...	-	-	345.5	(2)	345.5	(2)
8 ...	-	-	-	-	-	-
9 ...	-	-	340.0	(1)	340.0	(1)

WEIGHT (g.)

1 ...	172.5	(2)	198.0	(1)	181.0	(3)
2 ...	221.6	(504)	226.8	(513)	224.3	(1017)
3 ...	264.3	(3)	387.8	(5)	341.5	(8)
4 ...	637.5	(2)	699.5	(2)	668.5	(4)
5 ...	632.5	(2)	741.0	(2)	686.7	(4)
6 ...	643.0	(3)	738.0	(3)	690.5	(6)
7 ...	-	-	812.5	(2)	812.5	(2)
8 ...	-	-	-	-	-	-
9 ...	-	-	778.0	(1)	778.0	(1)

Appendix Table 29.--Mean fork length and weight of fish by age and sex in samples from purse-seine catches, Middle Atlantic Area, 1954
(Numbers of fish in parentheses)

FORK LENGTH (mm.)

Age	Males		Females		Both sexes	
1 ...	221.2	(37)	226.2	(17)	222.8	(54)
2 ...	251.1	(300)	256.3	(321)	253.8	(621)
3 ...	298.7	(445)	268.3	(535)	282.1	(980)
4 ...	299.4	(11)	307.9	(15)	304.3	(26)
5 ...	313.4	(7)	322.2	(6)	317.5	(13)
6 ...	-	-	334.2	(4)	334.2	(4)
7 ...	322.0	(1)	-	-	322.0	(1)
8 ...	-	-	-	-	-	-
9 ...	-	-	346.0	(1)	346.0	(1)

WEIGHT (g.)

1 ...	192.6	(37)	222.3	(17)	202.0	(54)
2 ...	290.4	(300)	334.6	(321)	302.5	(621)
3 ...	340.1	(505)	366.8	(535)	353.8	(1040)
4 ...	539.8	(11)	581.3	(15)	563.7	(26)
5 ...	591.7	(7)	700.0	(6)	641.7	(13)
6 ...	-	-	707.5	(4)	707.5	(4)
7 ...	681.0	(1)	-	-	681.0	(1)
8 ...	-	-	-	-	-	-
9 ...	-	-	523.0	(1)	523.0	(1)

Appendix Table 30.--Mean fork length and weight of fish by age and sex in samples from purse-seine catches, North Atlantic Area, 1954
(Numbers of fish in parentheses)

FORK LENGTH (mm.)

Age	Males		Females		Both sexes	
2 ...	274.5	(11)	279.7	(9)	276.8	(20)
3 ...	276.9	(730)	284.8	(824)	281.1	(1554)
4 ...	299.3	(68)	307.8	(75)	303.8	(143)
5 ...	310.7	(18)	324.0	(25)	318.4	(43)
6 ...	327.8	(7)	329.4	(9)	328.8	(16)
7 ...	326.3	(3)	344.0	(3)	335.2	(6)
8 ...	314.0	(1)	-	-	314.0	(1)
9 ...	-	-	334.0	(1)	334.0	(1)

WEIGHT (g.)

2 ...	366.2	(11)	410.0	(9)	385.9	(20)
3 ...	390.3	(730)	421.4	(824)	406.8	(1554)
4 ...	490.1	(68)	553.0	(75)	523.1	(143)
5 ...	560.8	(18)	617.4	(25)	593.7	(43)
6 ...	615.4	(7)	650.2	(9)	635.0	(16)
7 ...	577.7	(3)	739.3	(3)	658.5	(6)
8 ...	604.0	(1)	-	-	604.0	(1)
9 ...	-	-	838.0	(1)	838.0	(1)

Appendix Table 31.--Mean fork length and weight of fish by age and sex in samples from purse-seine catches, South Atlantic Area, 1955, excluding North Carolina fall fishery
(Numbers of fish in parentheses)

FORK LENGTH (mm.)

Age	Males		Females		Both sexes	
0 ...	127.8	(21)	127.7	(11)	127.8	(32)
1 ...	168.2	(875)	167.0	(1005)	167.6	(1880)
2 ...	193.4	(331)	195.5	(448)	194.6	(779)
3 ...	206.5	(40)	208.8	(51)	207.8	(91)
4 ...	210.9	(35)	213.4	(45)	212.3	(80)

WEIGHT (g.)

0 ...	35.4	(21)	34.1	(11)	35.0	(32)
1 ...	82.5	(848)	81.4	(978)	81.9	(1826)
2 ...	123.0	(331)	126.7	(448)	125.1	(779)
3 ...	153.6	(40)	155.9	(51)	154.9	(91)
4 ...	155.5	(35)	158.3	(45)	157.1	(80)

Appendix Table 32.--Mean fork length and weight of fish by age and sex in samples from purse-seine catches, Chesapeake Bay Area, 1955
(Numbers of fish in parentheses)

FORK LENGTH (mm.)

Age	Males		Females		Both sexes	
0 ...	152.8	(25)	150.8	(10)	152.2	(35)
1 ...	198.9	(566)	199.6	(629)	199.3	(1195)
2 ...	235.1	(657)	237.6	(740)	236.4	(1397)
3 ...	239.9	(12)	246.7	(25)	244.5	(37)
4 ...	248.4	(11)	255.1	(7)	251.0	(18)
5 ...	238.0	(1)	246.0	(1)	242.0	(2)

WEIGHT (g.)

0 ...	61.6	(25)	58.0	(10)	60.5	(35)
1 ...	142.0	(566)	142.9	(629)	142.5	(1195)
2 ...	217.6	(657)	225.0	(740)	221.5	(1397)
3 ...	246.1	(12)	269.0	(25)	261.5	(37)
4 ...	262.0	(11)	304.3	(7)	278.4	(18)
5 ...	217.0	(1)	253.0	(1)	235.0	(2)

Appendix Table 33.--Mean fork length and weight of fish by age and sex in samples from purse-seine catches, Middle Atlantic Area, 1955
(Numbers of fish in parentheses)

FORK LENGTH (mm.)

Age	Males		Females		Both sexes	
1 ...	223.0	(31)	235.4	(25)	228.5	(56)
2 ...	257.3	(1062)	260.6	(957)	258.9	(2019)
3 ...	274.9	(703)	282.0	(757)	278.6	(1460)
4 ...	285.0	(588)	294.8	(750)	290.5	(1338)
5 ...	295.0	(61)	303.4	(70)	299.5	(131)
6 ...	294.5	(4)	318.3	(17)	313.8	(21)
7 ...	321.0	(2)	336.1	(7)	332.8	(9)
8 ...	310.0	(1)	-	-	310.0	(1)

WEIGHT (g.)

1 ...	205.2	(31)	250.4	(25)	225.4	(56)
2 ...	311.2	(1062)	324.0	(957)	317.3	(2019)
3 ...	383.4	(703)	423.0	(757)	404.0	(1460)
4 ...	425.9	(588)	481.2	(750)	456.9	(1338)
5 ...	477.2	(61)	529.5	(70)	505.2	(131)
6 ...	462.8	(4)	627.2	(17)	595.9	(21)
7 ...	638.0	(2)	732.6	(7)	711.6	(9)
8 ...	543.0	(1)	-	-	543.0	(1)

Appendix Table 34.--Mean fork length and weight of fish by age and sex in samples from purse-seine catches, North Atlantic Area, 1955
(Numbers of fish in parentheses)

FORK LENGTH (mm.)

Age	Males		Females		Both sexes	
2 ...	276.4	(8)	280.5	(2)	277.2	(10)
3 ...	284.6	(177)	288.6	(195)	286.7	(372)
4 ...	296.0	(773)	305.0	(873)	300.8	(1646)
5 ...	310.4	(180)	319.4	(261)	315.7	(441)
6 ...	317.5	(73)	326.8	(107)	323.0	(180)
7 ...	324.4	(19)	333.2	(31)	329.8	(50)
8 ...	331.0	(4)	338.6	(8)	336.1	(12)
9 ...	337.0	(2)	357.5	(2)	347.2	(4)
10 ...	344.0	(1)	343.0	(1)	343.5	(2)

WEIGHT (g.)

2 ...	395.6	(8)	423.0	(2)	401.1	(10)
3 ...	413.3	(176)	436.9	(195)	425.7	(371)
4 ...	465.6	(760)	518.6	(861)	493.8	(1621)
5 ...	552.8	(179)	614.6	(253)	589.0	(432)
6 ...	599.6	(70)	667.9	(105)	640.6	(175)
7 ...	648.6	(19)	717.2	(31)	691.2	(50)
8 ...	688.2	(4)	753.5	(8)	731.8	(12)
9 ...	728.5	(2)	790.5	(2)	759.5	(4)
10 ...	745.0	(1)	802.0	(1)	733.5	(2)

Appendix Table 35.--Mean fork length and weight of fish by age and sex in samples from purse-seine catches, North Carolina fall fishery, 1955
(Numbers of fish in parentheses)

FORK LENGTH (mm.)

Age	Males		Females		Both sexes	
0 ...	121.8	(196)	123.9	(188)	122.8	(384)
1 ...	206.2	(123)	211.3	(104)	208.6	(227)
2 ...	255.7	(209)	263.1	(183)	259.1	(392)
3 ...	275.3	(30)	288.0	(31)	281.8	(61)
4 ...	299.7	(69)	308.0	(72)	303.9	(141)
5 ...	312.0	(11)	321.8	(12)	317.1	(23)
6 ...	321.7	(3)	319.0	(1)	321.0	(4)
7 ...	-	-	-	-	-	-
8 ...	338.0	(1)	-	-	338.0	(1)

WEIGHT (g.)

0 ...	30.8	(196)	32.1	(188)	31.4	(384)
1 ...	159.7	(123)	173.9	(104)	166.2	(227)
2 ...	340.7	(209)	374.2	(183)	356.3	(392)
3 ...	419.8	(30)	498.0	(31)	459.5	(61)
4 ...	537.5	(69)	593.5	(72)	566.1	(141)
5 ...	623.5	(11)	669.8	(12)	647.6	(23)
6 ...	669.7	(3)	750.0	(1)	689.8	(4)
7 ...	-	-	-	-	-	-
8 ...	806.0	(1)	-	-	806.0	(1)

Appendix Table 36.--Mean fork length and weight of fish by age and sex in samples from spring pound-net catches, Chesapeake Bay Area, 1955

(Numbers of fish in parentheses)

FORK LENGTH (mm.)

Age	Males		Females		Both sexes	
1 ...	170.5	(35)	174.3	(55)	172.8	(90)
2 ...	218.6	(112)	218.5	(138)	218.5	(250)
3 ...	238.0	(2)	225.8	(5)	229.3	(7)
4 ...	233.4	(5)	247.6	(7)	241.7	(12)
5 ...	-	-	249.0	(3)	249.0	(3)
6 ...	-	-	-	-	-	-
7 ...	-	-	346.0	(1)	346.0	(1)

WEIGHT (g.)

1 ...	81.9	(35)	87.5	(56)	85.3	(91)
2 ...	176.0	(113)	172.0	(138)	173.8	(251)
3 ...	238.0	(2)	195.0	(5)	207.3	(7)
4 ...	225.0	(5)	263.6	(7)	247.5	(12)
5 ...	-	-	265.3	(3)	265.3	(3)
6 ...	-	-	-	-	-	-
7 ...	-	-	662.0	(1)	662.0	(1)

Appendix Table 37.--Mean fork length and weight of fish by age and sex in samples from spring pound-net catches, Middle Atlantic Area, 1955
(Numbers of fish in parentheses)

FORK LENGTH (mm.)

Age	Males		Females		Both sexes	
2 ...	250.0	(1)	244.0	(1)	247.0	(2)
3 ...	275.8	(17)	284.0	(17)	279.9	(34)
4 ...	290.4	(138)	297.7	(175)	294.5	(313)
5 ...	303.4	(27)	313.8	(31)	309.0	(58)
6 ...	309.6	(8)	325.4	(16)	320.2	(24)
7 ...	333.5	(2)	338.7	(3)	336.6	(5)
8 ...	-	-	339.0	(1)	339.0	(1)
9 ...	-	-	337.0	(1)	337.0	(1)

WEIGHT (g.)

2 ...	279.0	(1)	266.0	(1)	272.5	(2)
3 ...	348.9	(17)	398.5	(17)	373.7	(34)
4 ...	401.3	(138)	440.0	(175)	423.0	(313)
5 ...	475.0	(27)	533.1	(31)	506.1	(58)
6 ...	511.4	(8)	574.7	(16)	553.6	(24)
7 ...	663.5	(2)	680.3	(3)	673.6	(5)
8 ...	-	-	704.0	(1)	704.0	(1)
9 ...	-	-	661.0	(1)	661.0	(1)

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